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THE

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THE INFLUENCE OF METEOROLOGICAL CONDITIONS ON INSECT LIFE.

BY CHARLES G. BARRETT.

The means employed by nature to keep species within due bounds—checking their inordinate increase or unnecessary decrease—are so certain and reliable in their results, and yet so obscure and difficult to trace in their modes of action, that almost any observations, however slight, which seem to be reliable as data from which to ascertain these means, are interesting and worthy of being put on record.

In every district and every climate there are evidently many species so peculiarly fitted to it that none of the periodical changes of weather and temperature materially affect their numbers, and from *these* little evidence can be obtained. It is from those species which only casually and rarely extend themselves from their natural homes into climates unsuitable for them, or from those which are always to be found in a given locality, but sometimes rarely, and always varying in numbers, that the most satisfactory evidence must be expected.

In the first class of cases an example occurred to me a few years ago which seems very much to the point. A friend, a well-known entomologist, being in the South of France and seeing with delight the lovely *Deiopeia pulchella* flying about, captured some, secured eggs, and sent them to a friend in England, who, by great care and assiduity, reared some of them to maturity and again obtained fertile eggs. A few of these he sent to me. They duly hatched, and as it did not seem very likely that any chance of observing native larvæ would ever occur to me, I regarded them with great interest. They were supplied with several species of *Myosotis*, but only about half a dozen of them seemed to possess sufficient vitality to feed, and as these evidently preferred *Myosotis palustris*, I potted some plants and kept them growing in a sunny window, where the young larvæ, covered with gauze, made themselves tolerably comfortable and grew rapidly, feeding with especial eagerness when the sun was shining on them. The weather happened to be fine and the sun hot for two or three weeks just at that time, and one larva made such progress that in a fortnight it was full-fed, when it spun a very slight cocoon on the gauze and turned safely to pupa. By this time two more larvæ were full-fed and left the food-plant for the gauze, the rest being fully half grown, when a change of weather came, with wind, heavy rain, and a total absence of sunshine. The larvæ were, of course, not exposed to the rain, but the effect of the change was that those full-fed made no attempt to spin up, and the rest ceased to feed, and in a few days they all fell off the gauze or the plants, dead. After a fortnight of wet weather it cleared up and the one pupa produced the moth—a male.

This seems to supply a key to the whole history of the eccentric casual appearances of this and many other inhabitants of warmer climates on our shores. In obedience to some singular instinct that impels insects when becoming too numerous in their natural homes to emigrate to "fresh fields and pastures new," they, contrary to their ordinary habits, cross land or sea, arriving, of course, very often in some inhospitable clime, where—if not at once captured and made native specimens of—they very likely soon fall victims to some pitiless storm of wind and rain. But supposing both these risks to be avoided, the moth—if an impregnated female—in due course lays its eggs, which most probably hatch, and the young larvæ are left—like Mark Twain—"friendless orphans in a foreign land." If the temperature happens to be lower or the weather wetter than the natural constitution of the species is able to endure, the difficulty is settled at once—the young larvæ die without even attempting to feed, but if matters are more favourable, the strongest of them struggle along, and if fairly favoured by the weather a few of them may reach the perfect state; if quite unusually favoured by the weather a large proportion of them may do so, producing those remarkable instances of the sudden appearance in numbers of a species usually rare. Such good fortune rarely extends to a second season and the species becomes a rarity again or is even probably exterminated here, to be renewed at some future time by the same instinct of migration. In cases such as these it appears to me that sunshine means life, and its absence destruction, to the larvæ, and that by this simple and obvious influence the extension of species beyond their assigned limits is practically prohibited.

It also happens sometimes that the immigrant, following instinctively its inherited habit, attempts to produce *an additional brood* in the year, over what the climate will allow.

For instance, from the second brood of *Colias Edusa* which was so abundant in 1877, eggs were obtained, and the larvæ fed up and turned to pupæ, but, as far as I can ascertain, none emerged. My old friend, Mr. Birchall, wrote me that all his pupæ *showed the yellow colour of the wings in December* and then died. This colour of the wings, as we all know, only shows itself when the insect is nearly ready to emerge, and these *Edusa* pupæ following inherited habit *tried* to emerge in the winter, so as to hibernate, as they are well known to do in the *perfect* state, but from insufficient warmth and sunshine were unable to muster sufficient strength.

Again, in 1880, there was a wonderful immigration of *Vanessa cardui*, the usual numbers in this district, as in others, being enormously re-inforced by—evidently—a portion of the vast army that migrated across Europe. Very late that autumn the Rev. Clennell Wilkinson, of Castlemartin, Pembroke, found, to his great surprise, that larvæ of *V. cardui* were tolerably common on the thistles on the warrens near his residence. All the *tall* thistles were dead, and these larvæ were feeding, at the beginning of October, on the young plants close to the ground, making their nests among the radical leaves. Some of these larvæ he took home, and, by great care, two of them entered the pupa-state, October 17th and 20th, and one emerged (indoors) November 20th of the same year, 1879. The rest died. This failure of instinct on the part of the immigrants surely explains, in some degree, the fact that last year the insect was more than usually scarce, hardly any appearing to have hibernated, and also why an insect with such a power of increase in a suitable climate is so uncertain and variable in its appearances in one that is unfavourable.

With reference to the second class of cases—those in which a species always present is periodically common or scarce—much has been written, excessive *rain* being usually assigned as the cause of diminution in numbers, sunshine as the cause of increase. Without doubt these causes act to a very large extent, large numbers of larvæ being actually *drowned* by continued heavy rain, and others rendered liable to disease, but a little evidence has come under my notice, pointing so distinctly to another influence of equal potency, that I think it well worth recording in detail.

It may be within the memory of some readers that at the end of the first season that I was here at Pembroke (1875), I contributed to this Magazine some notes on Pembrokeshire insects, in which I relieved my soul by a vigorous grumble at the (entomological) barrenness of the land. It appeared that although in the preceding winter there had been in England and Scotland severe cold and remarkably heavy snow, and though *snow* had fallen heavily here also, the winter had been in this district comparatively mild, the snow disappearing almost immediately, and that, in fact, for many years before, there had been little or no intense cold in Pembrokeshire. This mildness of weather continued through the three subsequent winters, there really was *no* hard frost, and snow was only occasionally seen on the hills. The predominence through each winter of winds from the south-east, south, west, and especially the south-west, all coming off a sea kept constantly warm by the gulf-stream, the water of which not only flows with each tide up the Bristol Channel, but also through the heart of the county by means of the windings of Milford Haven, fully explains this, and caused at that time a mildness of temperature probably unequalled in these Islands, except on the south coast of Devon and Cornwall. In many places fuchsias standing out of doors had never been cut down by frost within the memory of the inhabitants. Some of them were trees standing from fifteen to twenty feet high, with trunks of the size of a man's leg. One in the garden at Wallaston farm (thought nothing of by its owner) stood by the path where every one walked under it, its lowest branches being barely within reach of a tall man. The handsome shrubby *Veronicas*, usually greenhouse plants, had grown in the cottage gardens into great bushes five or six feet high, their abundant blossoms at the end of autumn affording the latest attraction to the *Vanessæ* before retiring to their winter quarters. Myrtles had actually grown old and ugly out of doors, sumachs of many years' growth stood in gardens, and it seemed that, but for the hoar frosts of October and November, the *Tropæolums* and *Pelargoniums* would have blossomed all the year round.

During these years, very many insects of general distribution in the United Kingdom, continued to be either very scarce, or confined to exceedingly restricted localities in this district. Of *Argynnis Paphia* only one or two specimens were seen in each season; *Argynnis Aglaia* was found only in two or three favourite spots in the wildest of the coast sandhills; of *Argynnis Euphrosyne* a very few specimens were seen in Canaston Wood, and one on the flank of Prescelly Mountain; while *Argynnis Selene* was scarcely to be found at all, except on a favoured slope of one of the more accessible sea-cliffs. *Satyrus hyperanthus* was also very local and uncommon, and *Satyrus Ægeria* only very sparingly to be seen. *Lycæna Ægon* must have existed somewhere, but was not observed in those years at all. Of *Bombyx neustria* I observed each year only a few nests on blackthorn in one or two favourite localities; the larvæ of *Bombyx quercus* and *rubi* were scarce, and those of *Odonestis potatoria* so uncommon, that it was difficult to find a dozen, to be reared for the sake of occasional chocolate coloured varieties. *Emmelesia affinitata* occurred almost as a rarity, and I searched long and carefully before I could find its larva for Mr. Buckler to figure. *Noctuæ* (except a few universally abundant species) appeared to be almost absent; such a dearth of ordinary night-flying species I never knew anywhere before.

But in the winter of 1878, there was a great change. Persistent north or north-east winds, intensely cold, froze everything up hard, the warm sea air was completely expelled, or if a slight change of wind permitted a few clouds to come over, the rain from them was instantly converted into ice, with which the high roads were coated to a thickness of three or four inches, for weeks. Horses properly "roughed" travelled well enough, the rough points cutting into the ice, which did not wear them down; but vehicles had a bad time. Heavily laden waggons brought to a turning down a hill declined to follow the horses in taking a proper sweep, but *went first*, and the wheels of lighter vehicles *skated* rather than turned round, with the sound and action of sleigh-runners.

The winters of 1879 and 1880 were equally cold, indeed, the latter was said to be the coldest known here for fifty years, even the sea sands along the tide line were covered ankle deep with ice and frozen snow, a sight very rarely seen on this coast. The first of these three winters killed all the shrubby *Veronicas* and some of the sumachs, and the tree fuchsias and myrtles above the ground.

And now I will give the results as regards insects.

In 1879 *Argynnis Paphia* began to be visible in every woodland; in 1880 it had become plentiful, and was even to be seen along the roads; in 1881 it abounded, and specimens actually flew about the town, in the gardens, and settled on the sunny fronts of the houses. *A. Aglaia* first increased in numbers in its pet localities, then spread along the coast, till, in 1881, it could be found in scores or hundreds in places where previously not a specimen had been seen. *A. Euphrosyne* became common in the woods, and at last began to fly about the country lanes, and *A. Selene* became abundant all over the country, flying about every little strip of marsh and wet land by the road sides. The same was the case with *Satyrus hyperanthus*, and *S. Ægeria* became common everywhere, while *Lycæna Ægon* flew about the heathy hills along the coast in plenty. *Zygæna filipendulæ*, which had been local and not common, rapidly became abundant, the larvæ conspicuously so; the nests of *Bombyx neustria* were to be found in scores on hawthorn and blackthorn bushes; *B. rubi* and *quercus* became plentiful, and *Odonestis potatoria* so abundant, that the larvæ could easily be collected in hundreds, where hardly one could be seen before, and even the empty cocoons were conspicuously numerous on the hedge-banks in the winter. *Emmelesia affinitata* became a common insect, and many other *Geometræ* turned up which had hardly been seen before.

But in *Noctuæ* the improvement was the most remarkable, as in that group the scarcity had been most marked.

Aplecta herbida and *Hadena thalassina* appeared close to the town; *Xylophasia hepatica* and *Apamea gemina* (both richly variable), *Miana fasciuncula*, *Grammesia trilinea*, *Noctua c-nigrum* and *festiva*, *Aplecta nebulosa*, *Hadena dentina*, and *Glæa spadicea*, all became abundant; *Thyatira derasa* and *batis*, *Acronycta ligustri* and *megacephala*, *Leucania comma*, *Rusina tenebrosa*, and *Noctua triangulum*, turned up more or less freely; *Triphæna janthina* came commonly into the gardens, and *Leucania littoralis* on the sand hills, and *Heliodes arbuti* in the meadows, both increased greatly in numbers. These, to be sure, are not remarkable species to obtain, the wonder was that they should have been previously rare or apparently absent. Other and scarcer species were also secured, but I am now referring to captures in home localities, which had been worked from year to year. Another species which wonderfully increased in numbers was *Pyrausta ostrinalis*, which actually swarmed last year.

Here we seem to have a direct example of cause and effect, but I am not prepared to say that the effect always arises in the same way. I think there can be no doubt that in the case of those insects whose mode of life includes the capacity for hibernation, their constitution is greatly strengthened and their chance of arriving at maturity increased, if the cold of winter is sufficiently severe to induce *complete* torpidity, undisturbed by warm and spring-like weather at unseasonable times, and this may account for the vast increase in numbers in species which, like *Bombyx neustria*, hibernate in the egg state; it also probably has a strengthening effect on those which, like the species of *Argynnis* already mentioned, pass the winter as small social larvæ under a silken tent on the ground, or which, like the *Noctuæ*, hibernate in the larva state on the ground or among dead leaves, and are tempted out to feed by every warm and genial evening.

On the other hand, there can be no doubt that mild winters act *directly* to cause the destruction of both hibernating larvæ and pupæ, in two ways. One is by encouraging the growth of mould, which we know attacks them as soon as, from excess of rain or humidity, they become sickly; the other by permitting the continued activity of predaceous creatures. These are very numerous. Moles continue at work in mild winters, instead of burying themselves deep in the ground; and mice are constantly active. These small mammalia destroy great numbers of Lepidopterous pupæ, and they abound in this district, as also do birds during the winter in an extraordinary degree. As soon as severe cold sets in to the north and east, the birds come down in swarms to the open fields and sheltered hill sides of this district, and it is hardly necessary to point them out as most industrious and persevering destroyers of larvæ. Predaceous beetles and earwigs are generally on the alert all through very mild winters, and although they probably do not eat *much* at that time, and, indeed, are not very plentiful in Pembrokeshire, they *must* destroy many larvæ and pupæ, having little else to subsist upon. But I believe that the mischief done by all these added together does not equal that done by the *Onisci*.

During mild winters these crustaceous vermin increase and multiply, and feed, and grow without check, till in so mild a climate they become a perfect nuisance, pervading everything indoors and out. It was hardly possible to keep them even out of the breeding cages, where they would get introduced when very small and unnoticed—or perhaps in the egg-state—hunt out and destroy every larva and pupa, and grow large and plump without ever showing themselves above the leaves and rubbish. Doubtless, their industry out of doors was in the same proportion, and my impression is that they approached very near to completely exterminating many species that would naturally be common here. Severe cold seems to destroy some of them, for they are not nearly so numerous now, and it certainly puts a complete stop to their destructive operations during a time when larvæ are most especially helpless and liable to attack. To this, with other causes already mentioned, I am inclined to attribute the extraordinary increase in numbers of so many species during the last three seasons, divided by severe winters. The winter now past has been mild, and, therefore, a further progressive increase cannot reasonably be expected; but I hope that the mischief done in one mild winter may not be serious. It is the progressive increase of destroyers with the decrease of victims through successive mild seasons that is really to be dreaded.

As a slight corroboration of this view, I may mention, that while this district of country is comparatively poor in all the species of which the larvæ feed and hibernate in any exposed situation, several species of *Noctuæ*, of which the larvæ live underground, are always abundant, and the country is actually rather *rich* in those species of *Tortricina* which feed and hibernate entirely within the stalks or roots of plants.

It is worthy of notice, that there are a very few species which have appeared unable to cope with severe cold. *Lobophora viretata* was tolerably common here during the first three or four years of which I have been writing, but after the first *cold* winter it became scarce, and has since almost disappeared. Its favourite locality was turned into a school playground and destroyed, but the decrease is also observable in the casual specimens which used to be found sitting on the fronts of houses, windows, gates and elsewhere all around the neighbourhood, of which hardly one occurred last year. *Diasemia literalis* has also been scarce for the last three years, but I have no great fear that it is dying out, since we have found casual specimens in two fresh localities.

Pembroke: 10*th April*, 1882.

NOTES ON THE *NEUROPTERA* OF STRATHGLASS, INVERNESS-SHIRE.

BY J. J. KING.

Having spent July and August of 1880 in a locality, to the Neuropterous fauna of which, very little attention has been paid, it has been suggested to me that I should make out a detailed list of my captures for this Magazine.

Strathglass is situated to the north of Loch Ness, being parallel with it; the Strath proper commences about nine miles from Beauly, and continues for about ten miles across the country in a south-westerly direction. It is for the most part about three-quarters of a mile broad; from south-west to north-east it descends in a series of terraces, which are almost level, these terraces are covered with small water-worn boulders, all which suggest to one the idea of its having been once the bed of a large lake; this idea is further borne out when the falls of Kilmorack are visited, the rocks at this place having the appearance of being wrenched asunder and hurled into the valley below, as if the pressure of the water above had been too much for them.

The Strath is very warm, the hills rising on either side rather abruptly to a considerable height, help to shelter it. The river

Glass, which has its source near Ben Attow, close to the west coast of Scotland, flows through it in a somewhat deep channel, and discharges itself in the Beauly firth. About seventeen miles from Beauly the Cannich joins the Glass; this place, where there is a small village containing a good hotel, I made my head quarters. Invercannich is, in fact, the centre of the district, all the churches are situated near here, and on Sundays it is quite a busy place, the people having to come in some cases upwards of twenty miles to get to church or obtain a glass of the national beverage.

This is one of the best localities I have ever visited for *Neuroptera*, more particularly *Trichoptera*, as water is plentiful in many conditions. A swift deep river (the Glass) traverses the Strath; then we have the Cannich, passing over many falls in its course before it reaches the Glass, which makes it very suitable for certain species of caddis-flies; burns of all sizes abound, while Lochs and "lochans" are too numerous to mention, these latter occurring at all heights on the surrounding hills, and as for ditches and marshy ground, the difficulty is to keep clear of them.

During the two months I staid in the district, little or no rain fell, but during the night a heavy fall of dew took place. In the day time the heat of the sun's rays made it almost impossible to undertake any long excursion, hence most of my collecting took place not far from Invercannich.

TRICHOPTERA.

Upwards of two-fifths of the British species of this group were taken.

Phryganea striata, L., a few odd specimens occurred in various localities. *P. obsoleta*, Hag., was the common species of the district, at no Loch or Lochan was it absent; I have had as many as a dozen in my net at one time while sweeping. In Glen Cannich, at a small peat-hole during an exceedingly warm day, I observed a very light coloured ♀ of this species thrice descend about eighteen inches into the water, using a reed to walk on, no doubt it was in the act of oviposition, it evidently came to the surface of the water to get air, as in each case it merely came to the water's level, turned round, and deliberately walked down again; each time, I should think, it stopped down about one minute and a half; the insect seemed strange to me, and I could not resist the temptation to catch it when it made its appearance on the surface the third time.

Glyphotælius pellucidus, Oliv., occurred at many of the Lochs, but was not common.

The genus *Limnophilus* was well represented, fifteen out of the twenty-four British species being captured.

Limnophilus rhombicus, L., common. *L. borealis*, Zett., three specimens turned up at different Lochs. *L. marmoratus*, Curt., common everywhere. *L. stigma*, Curt., rare. *L. lunatus*, Curt., abundant at all levels. *L. ignavus*, Hag., one specimen. *L. centralis*, Curt., very common. *L. vittatus*, Fab., equally common with the last. *L. affinis*, Curt., rare. *L. auricula*, Curt., frequent. *L. griseus*, L., some nice varieties of this common species were taken. *L. extricatus*, McL., one specimen. *L. luridus*, Curt., a few specimens were taken. *L. hirsutus*, Pict., one specimen. *L. sparsus*, Curt., occurred in swarms, some well-marked forms were taken.

Anabolia nervosa, Curt., common.

Stenophylax stellatus, Curt., very common along the banks of the Glass.

Micropterna sequax, McL., rare.

Halesus radiatus, Curt., common. *H. auricollis*, Pict.; the ♂ of this species was abundant during the last week of August, a few ♀ s were taken in the beginning of September.

Sericostoma personatum, Spence, was frequent.

Silo pallipes, Fab., not uncommon.

Crunœcia irrorata, Curt., a number were taken along with the following species.

Lepidostoma hirtum, Fab., very common on all the streams.

Beræa maurus, Curt., occurred sparingly on some of the burns.

Molanna palpata, McL., was one of the commonest species at all the Lochs; the semi-transparent ♀ is very different from the ♂.

Odontocerum albicorne, Scop., was common.

Leptocerus fulvus, Ramb.; a number were captured on the banks of the Glass by beating the bushes. *L. alboguttatus*, Hag.; a few specimens were taken with the last. *L. aterrimus*, Steph.; both the black and brown varieties were very common at all the Lochs, more particularly those above Tomich. *L. cinereus*, Curt., almost as common as the last. *L. albifrons*, L., very common along the Glass. *L. bilineatus*, L., in clouds around the Lochs above Tomich and elsewhere.

Mystacides nigra, L., *M. azurea*, L., and *M. longicornis*, L., all three species were common about the Lochs.

Triænodes bicolor, Curt., in numbers on the Lochs above Tomich.

Œcetis ochracea, Curt., and *Œ. lacustris*, Pict., turned up occasionally at various Lochs.

Hydropsyche instabilis, Curt., very common everywhere.

Philopotamus montanus, Don., in considerable numbers along the Cannich; one specimen of the *var. scoticus* was taken.

Wormaldia mediana, McL., two specimens occurred with the next species. *W. subnigra*, McL., the Cannich produced this species in abundance towards the end of August.

Plectrocnemia conspersa, Curt., rare.

Polycentropus flavomaculatus, Pict., was common along the Glass and Cannich. *P. Kingi*, McL., was taken along with *flavomaculatus*; it was described in the Ent. Mo. Mag., vol. xvii, p. 254.

Holocentropus dubius, Ramb., rare.

Cyrnus trimaculatus, Curt., very common everywhere.

Tinodes Wæneri, F., by no means rare.

Psychomyia pusilla, L., abundant.

Chimarrha marginata, L.; this beautiful species was very common on the moss-covered stones along the banks of the Cannich.

Rhyacophila dorsalis, Curt., was always turning up where it was neither expected nor wanted.

Glossosoma Boltoni, Curt.; a few specimens were taken. *G. vernale*, Pict., was very common.

Agapetus fuscipes, Curt., and *A. comatus*, Pict., were both abundant.

Hydroptila sparsa, Curt., very common on all the streams. *H. forcipata*, Eaton, also common.

Ithytrichia lamellaris, Eaton, common.

Orthotrichia angustella, McL., a few specimens were taken.

NEUROPTERA-PLANIPENNIA.

Sialis lutaria, L., common. *S. fuliginosa*, Pict., also common; I took one specimen which measures nearly one inch and a half across the wings, on a burn near Corriemony.

Sisyra fuscata, Fab., frequent.

Micromus paganus, L., very common.

Hemerobius marginatus, Ste., very common in Glen Affrick. *H. limbatus*, Wesm., common. *H. nervosus*, Fab., not uncommon. *H. subnebulosus*, Ste., odd specimens occurred.

Chrysopa flava, Scop., common. *Ch. vittata*, Wesm., common.

Coniopteryx tineiformis, Curt., occurred commonly by beating alder bushes, &c., growing near small burns. *C. aleyrodiformis*, Ste., taken with the last species.

Panorpa germanica, L., common, by sweeping rank herbage, &c.

PSEUDO-NEUROPTERA.

PSOCIDÆ.

Atropos divinatoria, Müll., in the house.

Clothilla pulsatoria, L., unfortunately rather common in the house.

Psocus sexpunctatus, L., a few taken. *P. bifasciatus*, Latr., common everywhere.

Stenopsocus cruciatus, L., very common in oaks.

Cæcilius flavidus, Ste., very common in all stages; this species varied considerably in the arrangement of the wing-veins. *C. vittatus*, Latr., not uncommon.

Elipsocus unipunctatus, Müll., very common. *E. Westwoodi*, McL., very common. *E. hyalinus*, Ste., abundant. *E. flaviceps*, Ste., equally common with the last. *E.* ——*sp. ?*, allied to *cyanops*, but larger, &c.

EPHEMERIDÆ.

Leptophlebia marginata, L., very common. *L.* ——*sp. nov. ?*

Ephemerella ignita, Poda, occurred in clouds during the afternoon in August.

Cloëon simile, Eaton, common.

Baëtis rhodani, Pict., in swarms. *B. pumilus*, Burm., with the last.

Siphlurus lacustris, Eaton, rare.

Rhithrogena semicolorata, Curt., very common. *R.* ——*sp.?*, *R.* ——*sp.?*, *R.* ——*sp.?*, these three forms may only be varieties of *semicolorata*, but they differ very considerably from that species, but owing to not having specimens preserved in fluid, they cannot satisfactorily be made out.

Heptagenia elegans, Curt., common. *H. longicauda*, Ste., everywhere. *H. lateralis*, Curt., a few were taken.

ODONATA.

Leucorrhinia dubia, Van d. Lind., one specimen was taken in Glen Cannich.

Sympetrum striolatum, Charp., common. *S. scoticum*, Don., abundant in Glen Cannich.

Libellula quadrimaculata, L., near most of the Lochs.

Cordulia metallica, Van d. Lind.; a few specimens were taken after much hard work. *C. arctica*, Zett.; I have a specimen of this species in my cabinet taken by Dr. Buchanan White, many years ago in Strathglass, but I was not fortunate in observing the species myself, although Dr. White gave me all the assistance he could.

Cordulegaster annulatus, Latr., in many localities.

Æschna juncea, Müll., abundant in all the Glens.

Pyrrhosoma minium, Hans., a perfect pest at all the Lochs.

Agrion cyathigerum, Charp., equally common with the last species.

This gives as the result of my trip 111 species, or, excluding the four doubtful species of *Ephemeridæ*, 107, more than half this number being taken up with the *Trichoptera*, namely, 63; the *Neuroptera-Planipennia* absorbing 13; leaving the remainder for the *Pseudo-Neuroptera*.

In conclusion, I have only to acknowledge the kindness with which my friend Mr. McLachlan has unravelled many of the more knotty points among the *Trichoptera*, and the assistance I have received from the Rev. A. E. Eaton when working at the *Ephemeridæ*.

207, Sauchiehall Street, Glasgow:
April, 1882.

THE TARSAL AND ANTENNAL CHARACTERS OF *PSOCIDÆ*.

BY PROF. H. A. HAGEN.

By a mere chance I see that a statement recently published by me concerning the tarsal structure of *Psocidæ* confirms, in a most satisfactory manner, that made by Prof. Westwood in 1857 (Proc. Ent. Soc. Lond., series 2, vol. iv, pp. 63, 64) regarding certain *Coleoptera*.

Being occupied with the *Atropina*, I was astonished to find that the young forms have only two-jointed tarsi (instead of three-jointed, as is found in the imago), but the last joint, internally, in the middle, shows a more or less visible division, where the 3rd joint (the median) will be formed, and just below it are one or two small bristles. I have observed this in *A. divinatoria* (reared by myself), *succinica*, and *oleagina*, and also in *Hyperetes tessellatus*. So long as the young have only two-jointed tarsi, the antennæ have also less joints. Thus, in *A. divinatoria* the latter have only 12 instead of the 15 of the imago; in *Hyperetes* the proportions are 13 to 23. But, although the third (middle) joint of the tarsi is produced by a division of the apical, it is just the contrary with the antennæ. In these the two thick basal joints, and the apical joint, are not divided; but in some species all the intermediate joints are so. *Hyperetes* is in the latter case, all the 10 intermediate joints being divided in the imago, as I can show from preparations. It is a remarkable fact that the mysterious *Hyperetes* shows, in its earlier stages, precisely the normal number (13) of joints for the *Psocidæ*. I am not prepared to give an opinion as to this genus. Other genera, such as *Cæcilius*, commonly considered to have only two-jointed tarsi, possess a small aborted third joint, just as occurs in many *Coleoptera*.

Cambridge, Mass.:
1*st April*, 1882.

FOOD-PLANTS AND TIMES OF APPEARANCE OF THE SPECIES OF *PSYLLIDÆ* FOUND IN GREAT BRITAIN, TOGETHER WITH OTHERS WHICH MAY BE EXPECTED TO OCCUR HERE.

BY JOHN SCOTT.

The publication of the synonymic list (vol. xviii, p. 253) corrected, as far as I possibly could, to that time, naturally led me to think of giving, in a collected and comprehensive form, as complete information as possible of the food-plant of each of the species, together with the time when the latter may be looked for; and, although they may be found a little earlier or later than the time here indicated, yet this shows when they were actually taken. But very little is still known of the earlier stages of many of these insects, of others nothing whatever, and the solution of this problem in any one of these cases I consider to be of much greater importance than the capture of the perfect insect itself. I have already, in vol. xvii (p. 132), explained my mode of rearing them, and how easy this is to be done, so that I need not repeat it. For the purpose of keeping this table as simple as possible, I have only used the old and well-known generic names; the recent sub-divisions being given in the list above referred to.

NAME.	FOOD-PLANT.	DATE OF APPEARANCE.
LIVIA *juncorum*, Latr.	Juncus conglomeratus, Linn.	June to September.
APHALARA *calthæ*, Linn.	Caltha palustris, Linn. Rumex acetosella, Linn. Polygonum hydropiper, Linn.	May to October.
nebulosa, Zett.	Epilobium angustifolium, Linn.	
nervosa, Först.	Achillea millefolium, Linn.	May to September.
picta, Zett.	Chrysanthemum leucanthemum, Linn.	
artemisiæ, Först.	Artemisia campestris, Linn. „ absinthium, Linn.	June to September.
exilis, Web. and Mohr.	Rumex acetosella, Linn.	June to October.
RHINOCOLA *aceris*, Curt.	Acer campestre, Linn. „ pseudoplatanus, Linn.	May to end of July.
ericæ, Curt.	Calluna vulgaris, Salisb.	June, July.
speciosa, Flor*	Populus nigra, Linn.	June, July.
LIVILLA *ulicis*, Curt.	Ulex europæus, Linn.	June.
ARYTÆNA *genistæ*, Latr.	Ulex europæus, Linn. Sarothamnus scoparius, Koch	May to September.
PSYLLA *spartii*, Guér.	Sarothamnus scoparius, Koch.	May, June.
Horvathi, Scott*	Genista tinctoria, Linn.	
rhamnicola, Scott	Rhamnus catharticus, Linn.	July to October.
pruni, Scop.	Prunus spinosus, Linn.	May.
cratægi, Först.	Cratægus oxyacantha, Linn.	April to June.
costalis, Flor	„ „ „	August.
peregrina, Först.	„ „ „	June.
costatopunctata, Först	„ „ „	May to November.
pyri, Linn.*[a]	Pyrus communis, Linn.[c]	June to October.
apiophila, Först.[d]	„ „ „	June, July.
pyrisuga, Först. ?	„ „ „	May, August, Sept.
pyrastri, F. Löw.*	„ „ „	June to August.
simulans, Flor	„ „ „	August.
pyricola, Först.	„ „ „	August.
mali, Schmdb.	„ malus, Linn.	May to October.
visci, Curt.	Viscum album, Linn.	May to September.
viburni, F. Löw.*	Viburnum lantana, Linn.	May, June.
fraxinicola, Först.	Fraxinus excelsior, Linn.	August, September.
fraxini, Linn.	„ „ „	June to September.
discrepans, Flor*	„ „ „	May, June.
hippophaës, Först.	Hippophaë rhamnoides, Linn.	August, September.
phæoptera, F. Löw.*	„ „ „	June.
buxi, Linn.	Buxus sempervirens, Linn.	May to October.
stenolabis, F. Löw.	Salix capræa, Linn.	May, June.
salicicola, Först.	„ „ „	June to September.
betulæ, Linn.	Betula nana, Linn.	June.
Löwii, Scott	„ alba, Koch.	February, Nov.
Hartigii, Flor	„ verrucosa, Ehrh.	May.
alni, Linn.	Alnus glutinosa, Gaert.	July, August.
Försteri, Flor	„ „ „	June to end of Oct.
pineti, Flor	Pinus sylvestris, Linn.	May to November.
SPANIONEURA *Fonscolombei*, Först.*	Buxus sempervirens, Linn.	June.
TRIOZA ———, ?*	Berberis vulgaris, Linn.	
———, ?*	Cardamine sylvatica, Link.	

Name.	Food-plant.	Date of Appearance.
Trioza *cerastii*, H. Loew.*	Cerastium triviale, Link.	June.
Walkeri, Först.	Rhamnus catharticus, Linn.	July, August.
rhamni, Schrank.	„ „ „	May, July to Oct.
ægopodii, F. Löw.*	Ægopodium podagraria, Linn	April to June.
crithmi, F. Löw	Crithmum maritimum, Linn.	April to June.
galii, Flor	Galium palustre, Linn.	June to September.
Neilreichii, Frauenf.*	Valerianella dentata, Deitr.	June.
chrysanthemi, F. Löw.*	Chrysanthemum leucanthemum, Linn....	
senecionis, F. Löw.*	Senecio nemorensis, Linn.*b*	July.
flavipennis, Först.*	Lactuca muralis, Don.	May, Aug. to Oct.
———, ?*	Leontodon hastilis, Linn.*b*	
proxima, Flor*	Hieracium pilosella, Linn.	August and Sept.
flavipennis, Först.*	„ „ „	May, Aug. to Oct.
Dalei, Scott	Armeria maritima, Willd.	October, November.
chenopodii, Reut.*	Chenopodium	
	Atriplex	
urticæ, Linn.	Urtica urens, Linn.	May to October.
munda, Först.	„ dioica, Linn.	July to September.
salicivora (Reut.), Scott	Salix capræa	August.
striola, Flor*	„ „	June to November.
unifasciata, F. Löw.	„ purpurea, Linn.	
albiventris, Först.	„ „ „	Sept. and October.
„ „	„ alba, Linn.	May, Aug. to Oct.
„ „	„ fragilis	Sept. and October.
remota, Först.*	Quercus robur, Linn.	
acutipennis, Zett.	Pinus sylvestris, Linn	May to October.
viridula, Zett.	„ abies	June to October.
abdominalis, Flor	„ „	August, September.

Lee, S.E.: *26th March*, 1882.

DESCRIPTIONS OF NEW SPECIES OF *ÆGERIIDÆ* AND *SPHINGIDÆ*.

BY HERBERT DRUCE, F.L.S., F.Z.S.

Family ÆGERIIDÆ.

Sara Pryeri.

Wings bright bronze-brown shot with purple; posterior-wing with two transparent spots close to the base, the fringe black; body brown, and the anal tufts bright red. Antennæ and legs black. Expanse of wings, 1⅛ in.

Hab.: N. E. Borneo, Sandakan (*Pryer*). Mus. Druce.

This species is allied to *S. chalybea*, Butler, from Singapore.

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* Not yet ascertained to be British.

a There is no proof that the *Ps. pyri* of Curtis is identical with that of Linn., and, therefore, I include it amongst those not yet ascertained to be British.

b The plants are not British, but, probably, the insects may be found on some of the allied species.

c Pear-trees in gardens should be carefully examined, as several of the species infesting the wild pear, if not the whole, are found upon them.

d Although Förster says he had one specimen from Mr. Walker, I have not seen any of recent date, and have not, therefore, included it in my former list. The *Ps. notata*, Flor, is synonymous.

Family SPHINGIDÆ.

Sub-Family *CHŒROCAMPINÆ.*

PANACRA RUTHERFORDI.

Primaries above dark brown, speckled with reddish-brown along the costal margin, crossed from the apex to near the base by a wide, pale-coloured, straight band, bordered on each side by fine blackish lines, the apical margin slightly dentated: secondaries dark brown, paler at the base; body pale brown. Under-side, uniform dull brown, thickly speckled with pale ochreous scales. Expanse of wings, 3 in.

Hab.: West Africa, Cameroons (*Rutherford*).

Type, Mus. Druce.

This species resembles *P. vigil*, Guér., but is easily distinguished by the straight band of the primaries and much darker colour.

CHŒROCAMPA GODMANI.

Primaries dark greyish-brown at the base, which colour extends beyond the middle, the apical third ochreous, clouded with dark brown; several indistinct lines crossing the wings from the inner margin to the black discal dot. Secondaries shining dark slaty-brown, the outer margin dark brown, and a small ochreous spot close to the anal angle; head, thorax, and abdomen above, dark brown, the sides black, bordered above with red, and beneath with white lines, under-side pale brown. Under-side of primaries dark brown, richly clouded with red and yellow scales near the apex; secondaries greyish-brown, crossed in the middle by three indistinct dark lines speckled with reddish scales. Expanse of wings, 3⅜ in.

Hab.: Panama, Volcano de Chiriqui (*Champion*).

I have only seen one specimen of this species: it is very distinct from any that I am acquainted with, but comes nearest *Ch. falco.* I hope shortly to figure it in the "Biologia Centrali-Americana."

DAPHNIS ANDAMANA.

Much like *D. Horsfieldii*, but rich red-brown; primaries crossed beyond the middle by a broad, dark brown band, palest on the outer margin, a dark brown spot close to the base in the middle of the wing. Secondaries chocolate-brown, crossed by a sub-marginal pale brown line from the middle of the costal margin to the anal angle. Under-side pale reddish-brown, both wings crossed by four darker waved lines; head, thorax, and abdomen dark brown. Expanse of wings, 2¼ in.

Hab.: Andaman Islands. Mus. Druce.

This species seems somewhat intermediate between *D. Horsfieldii* and *D. Baga*, but more closely allied to the latter.

DAPHNIS TORENIA.

Primaries fawn-colour, crossed beyond the middle by a broad brown band, and mottled with brown to near the apex; a large, oval-shaped, brown spot close to the base; the inner half white, with a small black dot in the middle. Secondaries rich chocolate-red, excepting the basal third, which is almost black; an indistinct whitish line, close to the anal angle, extending nearly to the middle of the wing.

Under-side red, closely resembling *Chærocampa Belti*, only that the green markings in that species are replaced by greyish-white. Head, sides of the thorax, and base of abdomen dark brown, a white line on each side of the thorax, and crossing the base of the abdomen; the under-side pale reddish-brown.

Expanse of wings, 3¾ in.

Hab.: Fiji Islands (*Watkins*). Type, Mus. Druce.

This fine species is very distinct from any yet described; in form it resembles *D. hypothous*, in colour it comes nearest *D. andamana*.

Sub-Family *AMBULICINÆ*.

AMBULYX ELWESI.

Much like *A. rubricosa*, but shorter-winged and more robust. Primaries rich brown, the outer half the darkest, a series of ochreous marks along the hind margin, extending nearly to the anal angle. Posterior-wing bright pink, the outer half deep brown, an indistinct black line bordered with greyish-blue near the anal angle. Under-side rich brownish-pink; primaries bright pink near the base, and an indistinct greyish band crossing the wing near the outer margin; secondaries crossed in the middle by a pinkish-white band; between it and the base on the costal margin is a brown spot. Head, thorax, and abdomen brown, paler beneath. Antennæ and legs brown.

Expanse of wings, 3¾ in.

Hab.: Darjiling (*Elwes*). Type, Mus. Druce.

This beautiful species is allied to *A. rubricosa* and *A. junonia*. I am indebted to Mr. Elwes for the pleasure of describing and adding it to my collection.

AMBULYX ARGENTATA.

Primaries glossy greyish-brown, almost white at the apex, crossed by a series of pale waved lines, a black dot at the end of the cell, the outer margin and the fringe brown. Secondaries pale brown, thickly speckled with white hairs, a row of white spots crossing the middle of the wing from the anal angle to the costal margin, the spots nearest the inner margin are the largest. Under-side dark pinkish-brown, the spots and markings as above, only more distinct, and speckled with brown scales. Head, sides of thorax, and base of the abdomen dark olive-green. Middle of thorax and abdomen silver-grey.

Expanse of wings, 3¾ in.

Hab.: Saigon, Cochin China (*Boucard*). Type, Mus. Druce.

This very distinct species reminds one at first sight of *A. hypesticta*, the under-sides being somewhat alike.

Sub-Family *SMERINTHINÆ*.

TRIPTOGON ROSEA.

Primaries above pale pinkish-brown, crossed by three indistinct brown lines, a dark brown spot close to the anal angle, and a large dark patch of the same colour extending along the outer margin almost to the apex. Secondaries bright rosy-red, with a brown spot at the anal angle. Under-side reddish-brown, both wings crossed by several indistinct, pale brown, waved lines. Head, thorax, and abdomen, pale brown.

Expanse of wings, 2¼ in.

Hab.: West Africa, Cameroons (*Rutherford*). Mus. Druce.

Not unlike *T. complacens* from Japan, but quite distinct.

TRIPTOGON CYTIS.

Primaries and secondaries uniformly pinkish-grey-brown, crossed in the middle by a brown line, a small black spot at the base of the primaries: under-side as above. Expanse of wings, 2½ in.

Hab.: South Africa, Vaal River. Mus. Druce.

A very distinct species, not nearly allied to any with which I am acquainted.

Sub-Family *SPHINGINÆ*.

PROTOPARCE LAUCHEANA.

Primaries light chestnut-brown, marked and banded with white, resembling *P. solani*. Secondaries blackish-brown. Under-side uniform slate-colour. Upper-side of head, thorax, and abdomen chestnut-brown; under-side white, tinged with pink. Expanse of wings, 3¼ inch.

Hab.: West Africa (*Thomson*). Type, Mus. Druce.

HYLOICUS REEVEI.

Primaries greyish-brown, crossed from the inner margin to near the apex by a wide whitish band, the outer margin almost black, between it and the white band are several indistinct brown lines. Secondaries greyish-white, bordered with dark brown. Under-side uniform greyish-white, the secondaries almost white. Head, thorax, and abdomen above, black; under-side whitish. Expanse of wings, 2¼ in.

Hab.: Paraguay (*Reeve*). Type, Mus. Druce.

This species is allied to *H. Dynæus*, Hübner, from which it differs in the broad white band on the primaries, and the almost white secondaries. Hübner's species is not included in Mr. Butler's monograph of the *Sphingidæ*, but is well figured in the "Sammlung exotischer Schmetterlinge," Nos. 463, 464.

The Beeches, Circus Road, N.W.:
29th April, 1882.

REMARKS ON SOME CENTRAL AMERICAN SPECIES OF *PYRRHOPYGE*, HÜBN.

BY GERVASE F. MATHEW, R.N., F.L.S., F.Z.S., &c.

While on the Pacific station during 1872—4, I had an opportunity of making the acquaintance of this remarkable genus, and when *Pyrrhopyge Amra*, Hew., was noticed for the first time at San Blas, on the coast of Mexico, in December, 1873, it was taken for some species of day-flying moth, for its habits were quite unlike those of any butterfly I had previously met with. They flew very rapidly during the hottest part of the day, and were fond of passing backwards and forwards in front of some favourite bush, before which they occasionally stopped and hovered, their wings being moved with extreme rapidity. Sometimes they would suddenly alight on the under-side of a leaf and were lost to view, and one's beating stick had to be brought into requisition to dislodge them. At other times before settling they would fly in a short jerking manner, somewhat after the fashion of the long-tailed skippers *(Eudamus)*. At the Island of Tobago, in the bay of Panama, the following April, another species, *Pyrrhopyge Acastus*, Cram., was tolerably numerous, and I was so fortunate as to discover its larva and pupa and bred the perfect insect. At the time I had no idea what these larvæ would produce, and certainly did not expect to see a butterfly. What they fed on I cannot say, for they were full-grown when found, and preparing to pupate between chinks of bark on a trunk of a tree. They may have fed upon the leaves of the tree itself, or, what is more likely, upon some of the surrounding low herbage. The larva, which is soft and flabby to the touch, is clothed with fine straw-coloured hairs, is somewhat cylindrical in shape, and tapers towards each extremity; head cordate, and very large in proportion to the size of the larva, and of a brick-red; general colour reddish-brown, with well defined segmental rings of a deeper hue, and narrow black, yellow, and reddish perpendicular lines on each segment; under-surface, claspers, and prolegs light red. When full fed it spins a loose network cocoon between chinks of bark and therein turns to a light-red pupa with many segmental black spots, and covered with fine white down, and a purplish powdery bloom. The eyes are black and very prominent. The butterflies emerge in about three or four weeks. Another fine species, *Pyrrhopyge Patrobas*, Hew., was rare, and difficult to obtain in perfect condition, for they flew about so rapidly among the brushwood that they soon became worn.

H. M. S. "Espiègle," Simons Bay, Cape of Good Hope:
14th February, 1882.

Euplectus bicolor, &c., on Cannock Chase.—A few days since I found some half-dozen specimens of *Euplectus bicolor*, in decaying birch logs on Cannock Chase. In company with them occurred *Euplectus nanus* (Reich.), *E. nigricans*, *Scydmænus exilis*, *Ptinella testacea*, *P. aptera*, *P. angustula*, *Pteryx suturalis*, *Tetratoma fungorum*, and *Liodes humeralis*.—W. G. Blatch, 214, Green Lane, Smallheath, Birmingham: *May* 18*th*, 1882.

Actidium coarctatum, &c., near Gloucester.—Last autumn, at Barnwood, near Gloucester, in a hotbed composed partly of tan and partly of manure, I found *Nephanes Titan* plentifully, and with it *Ptilium foveolatum, Millidium trisulcatum*, Aubé, and one specimen of *Actidium coarctatum*. The capture of this latter insect in a hotbed is worth recording, as confirming the statement of the late Mr. Haliday that he had taken it in such a locality; it has been supposed that he made a mistake, as the *Actidia*, as a rule, are river-bank insects.—W. W. Fowler, Lincoln: *2nd May*, 1882.

Notes on Spring Hymenoptera at Hastings in 1882.—During a stay of a few days at Hastings, from the 6th to the 10th of this month, I succeeded in meeting with a considerable number of species of *Andrena*, &c., and as the season has been one of such unusual mildness I thought it would be of interest to notice those which occurred. Nearly all the species were found either on Sallows in the vicinity of Ore lane, or flying about the sandy banks of the Croft.

Andrena pilipes, ♂ and ♀, common on the Croft, the ♀ with the pubescence of the thorax unusually grey; *A. albicans*, ♂ ♀, Ore; *A. atriceps*, Croft; *A. Trimmerana*, ♂ ♀, Ore, common, a few very brightly coloured females of the var. *spinigera*, most of the females slightly red at the base of the abdomen beneath; all the males of the ordinary *Trimmerana* type—*A. thoracica*, Ore; *A. nitida*, Croft; *A. fulva* ♀, Croft; *A. Clarkella* ♀, Ore; *A. nigro-ænea* ♂ ♀, Ore and Croft; *A. Gwynana*, Croft and Hollington; *A. lapponica* ♀, Ore; *A. præcox* ♀, Ore; *A. varians* ♀, Croft; *A. fasciata*, ♂ ♀, Croft; *A. parvula* ♂, Ore; *Nomada succincta*, Croft; *Anthophora acervorum*, Croft; *Bombus lapidarius, B. terrestris, B. pratorum*, Ore; *B. Derhamellus*, Hollington.—Edward Saunders, Holmesdale, Wandle Road, Upper Tooting: *April 11th*, 1882.

Gerris lacustris in hibernation far from water.—On the 17th of March, at Weybridge, I had some moss-hunting without success, having found nothing beyond species of insects that are usually seen in or under moss at all seasons, many of the examples defective by efflux of their time. I assume the reason of this paucity was that all the species that had made use of the moss simply for hibernation had gone out and were distributed, induced thereto by the recently previous, and then still existing, hot sunny weather. The abundance of insects of many kinds which had been roused from their various hiding places and were flying at this early season was remarkable; one of them, *Hylurgus piniperda*, I caught with my hat. There was, however, one exception to the general liveliness—a *Gerris lacustris*—which was deep in long damp moss growing under the shelter of a furze-bush on the northern side of a hillock, and this insect though still was not torpid. The remarkable thing, however, was not so much its remaining in seclusion as that it had travelled half a mile away from water to gain its winter quarters; the species usually hibernating close to the water on the surface of which it had lived.—J. W. Douglas, 8, Beaufort Gardens, Lewisham: *25th March*, 1882.

Capture of the nymph of Aphalara nervosa, Förster, on Achillea millefolium.—For three seasons I have searched diligently for the above and younger forms of this species, but without success, until about a week ago, when, after a couple of hours' work, I was rewarded with the sight of one, and then another, until I took about sixty specimens. As far as I have observed, they sit in the axils of the leaves, or at the base outside, and with the head downwards. They adhere very firmly to the plant, and when they do move, it is not at a rapid rate. The larvæ are of a more delicate green colour than in the following stage, and are unicolorous. The nymph is of a darker green in some cases than in others. *Head* slightly convex in front, with a faint notch in the middle, and about six to eight short white hairs round the margin. *Antennæ* short, yellow, spigot- or peg-shaped, 1st and 2nd joints green, apex black. *Eyes*, viewed from above, large, greenish-white, from the side-centre black. *Thighs* green, *tibiæ* and *tarsi* pale yellow, apex blackish. *Elytra*-lobes yellowish or very pale brownish-yellow, base pale, costal margin somewhat convex, flattened in the middle, posterior margin slightly concave next the anterior angle, which is acute. *Abdomen* green, convex, with a longitudinal depression or faint channel on each side nearer to the centre than the margin; segmental incisions somewhat strongly defined; margins rounded to the apex, which is acute, and with about ten long white hairs on each side of the last two segments, extreme apex yellowish. Length, 1 line (Paris). The eyes, as seen from above, present a somewhat curious appearance, the creature looking as if it were blind or had a hood over them.—John Scott, Lee, S.E.: *May* 12*th*, 1882.

Note on Setodes argentipunctella, McLach.—This exceedingly delicate and pretty little species was first described in this Magazine, vol. xiv, p. 105 (1877), from examples taken by Mr. Hodgkinson at Windermere, and by the Rev. A. E. Eaton at Killarney. Mr. King found it in great abundance at the former locality in August, 1881 (*cf.* Vol. xviii, p. 163). When Mr. A. R. Wallace was writing his "Island Life" (published in 1880), he applied to me for a list of *Trichoptera* apparently exclusively British, which appeared at p. 337 of his work, and naturally included *S. argentipunctella.* As a proof of how hazardous it is to generalize upon apparent facts of this nature, I will mention that when on a visit to Belgium in July, 1881, I found the species in the greatest profusion along the banks of the curious little river termed "La Semois," at the town of Bouillon (which it may be well to mention is near the French frontier, and the battle-field of Sedan). It is included in the list of captures made on that excursion (*cf.* Comptes Rendus, Soc. Ent. Belg. xxv, p. cxxxi), which is a sufficient record so far as general distribution is concerned. The subject is brought forward here, in its present form, as a warning against hasty generalization. It is also an argument in favour of what have been termed "mere collectors." If the insect had been (say) Lepidopterous there can be no doubt it would not so long have remained unnoticed in this country, and probably long before its discovery here, some continental Entomologist would have anticipated us in its detection, reversing the conditions that caused it to be placed in a list of species apparently peculiar to Britain.—R. McLachlan, Lewisham: *4th April*, 1882.

Variety of Zygæna filipendulæ.—Two very interesting specimens of *Zygæna filipendulæ* were exhibited at a meeting of our Local Field Club a week ago by the Vice-President. In one of them the posterior (or sixth) red spot on the anterior wings was entirely absent, and in the other only faintly traceable, so that both might easily have been passed over as "5-spotted." They have, however, the *very narrow* blue-black border to the hind-wings, and the form and general characters of *filipendulæ*, and were reared with a number of ordinary examples of that species, from cocoons found in one of the hollows of the coast-cliffs, where no other species of *Zygæna* is found.—CHAS. G. BARRETT, Pembroke: *16th February*, 1882.

On the habits of Lepisma saccharina.—Hitherto the "sugar-louse" has been considered rather a harmless creature; but, according to my observations, it has a better character than it deserves, and does much injury, of which, however, it seldom gets the credit, owing to the rapidity with which it disappears when in any way disturbed. It likes moisture, and is partial with me to some cupboards in the wall, and also occurs near the window under the carpet. In such damp places it perforates the carpet by degrees completely. The dust-covers in the seldom-used spare bed room were likewise gnawed in several places, and apparently by this creature, as I constantly surprised it close to the recently gnawed holes. In a badly closed insect box, which was lined with paper, the *Lepisma* had crept in and partially gnawed the paper. It could not manage to reach the insects, being unable to crawl up the long pins; but in one box of *Lepidoptera*, of which the wings here and there touch the wadding which lay above the cork, pieces had been eaten out of the wings by our active little friend. Hence the *Lepisma* may, under certain conditions, become a dangerous enemy to the Entomologist. It belongs to those foes of mankind which, working in concealment, slowly but surely carry on the work of destruction.—GUSTAV DE ROSSI. (Extracted from Entomologische Nachrichten, 1882, pp. 22, 23: *January*, 1882).

Obituary.

Beebee Bowman Labrey, born June 30th, 1817, spent his early childhood at Allonby in Cumberland. When 9 years old he was removed to Manchester, whence he went to the Friends' School at York.

He early showed a fondness for Natural History, and devoted his attention mostly to Entomology. During the latter years of his life much of his time was occupied in working out and drawing the plumules found on some families of butterflies. The manuscripts and figures he has left behind him were, we believe, nearly ready for publication. About two years ago his manuscripts were stolen from the railway carriage as Mr. Labrey was coming up to London. He immediately set to work to re-write and figure the whole work, from the original plumules he had mounted for the microscope.

He was a thorough and conscientious worker, and had a great facility for learning languages and drawing. He was modest and retiring in his nature, though ever ready and eager to encourage and assist the young.

He died on the 26th April, at his country cottage at Disley, Cheshire, from the effects of suppressed gout.

Entomological collecting on a voyage in the Pacific. [The letter, from which we make the following extracts, written in continuation of one of which the greater portion was published in this Magazine (vol. xviii, pp. 81—86), has been kindly placed at our service, at the desire of the writer (to whom we feel much indebted), by the Rev. W. W. Fowler, to whom it was addressed.]

I added very little to my collection of insects during July and September, at Callao. The butterflies had nearly all disappeared by the end of June, and the weather was generally unfavourable for collecting, as well as the reverse of tropical—the thermometer rarely standing above 65° in the day-time, and usually down to 57°, or even less, at night, so that I often felt quite cold. The sun was sometimes obscured for a week at a stretch, and though there was no actual rain, a dense wet sea-fog ("Garua," as it is called), which may fairly be compared to the traditional Scotch mist, prevailed almost every day, and was far more disagreeable than a heavy shower would have been. I managed to increase my local list of butterflies to 46 species, the additions being small and inconspicuous, with the exception of a pretty yellow and black *Pieris*? Among the moths, the best novelty to me was a very handsome little *Cerura*, about the size of *C. bifida*, but rather like *C. vinula* in style of marking. The cocoons were not rare on willow-trunks in August, but I have not yet been able to meet with the larva. A few fresh beetles, mostly small *Heteromera*, occurred. On the island of San Lorenzo (6 miles from Callao) the *Coleoptera* appeared to be rather better represented than on the mainland. Early in September, I obtained some 25 species of beetles, mostly *Geodephaga* (*Harpalus*, *Pterostichus*, *Scarites*, &c.) and *Heteromera*—not to mention plenty of scorpions—under stones on the top of the highest hill, 1200 feet above the sea; and among dead mussels on the beach, a large number of a fine species of *Dermestes*, and of a *Phaleria*, very like our British *P. cadaverina*. I also met with a few small moths which I had not seen on the mainland, among them being a very fine *Agdistis*, much larger and more richly marked than our *Bennettii*: I bred it from a little glassy-green larva, which I picked up casually on the sand. San Lorenzo is for the most part excessively barren, consisting of either naked rock or drifting yellow sand; only on the highest summit is there a trifling amount of vegetation, among which the wild potato holds a conspicuous place: it produces well-formed tubers, sometimes two inches in diameter, but they are too watery and bitter to be eatable.

The great event of my stay at Callao, was a trip up the Trans-Andine Railway to Chicla, which I enjoyed, on the 17th June. This railway, intended to connect the fertile tropical districts east of the Cordillera with the Pacific coast, is a most wonderful piece of engineering, it being carried up the valley of the Rimac to Chicla (12,200 feet above the sea), and then over the main ridge of the mountains to Oroya; the highest elevation reached by the railway being 15,722 feet—about 50 feet less than the height of Mont Blanc! The line has, however, been completed only as far as Chicla, and the works have been suspended ever since the beginning of the Chilo-Peruvian war. The scenery all the way is of the most magnificent description, and requires only a little more vegetation to render it perfect, though some favoured spots on the route are verdant enough. At Chicla, the hill-sides were carpeted with beautiful wild-flowers, a shrubby lemon-yellow *Calceolaria*, and a plant like a lupine, with showy blue-purple blossoms, being abundant, with yellow hawk-weeds and *Cruciferæ*, and a conspicuous species of *Loasa* (I think) with large garnet-red poppy-like flowers, and most formidable stinging hairs. I was able to devote only about half-an-hour to collecting here, and observed five species of butterflies, three of which (*Pyrameis Carye*, a small *Colias*?, and a *Satyrus*) appeared only singly, and I could not catch them. The other two were a little satiny-blue *Lycænid* (rare), and a small *Euterpe*?, not unlike, in miniature, a lovely *Pieris Daplidice* in marking on the upper-side. It was not uncommon, but very active, having much of the flight and habits of a skipper: and owing to the rugged nature of the ground, and the difficulty of active exertion at that elevation, I had much difficulty in securing half-a-dozen examples. On the way up, I managed to snatch a few minutes' collecting at San Bartolomé (4950 feet) and Matucana (7790 feet): at the first place I took a nice *Satyrus*, and at the latter, a beautiful species of *Pieris*, and a *Colias*, which I have reason to believe is the rare *C. Hermina*, Butler. Chicla would, I think, amply repay any entomologist who could stay there for a few days; I hope to re-visit this locality before I finally leave the Pacific station.

I had become very tired of Callao and its surroundings, and was glad enough when the order finally came for the "Kingfisher" to proceed northwards. We sailed along a miserably barren and surf-beaten coast, calling at one or two small ports, where landing was impossible in the ship's boats, being only practicable in large launches, or in "balsas." These are rude rafts made of logs of a peculiarly light and porous wood (which, by the way, makes capital setting boards): they look very clumsy and unwieldy, but are managed by the natives with great dexterity, and are in general use all along the coast. On September, we arrived at Payta, and stayed there until the 24th. This place has the advantage of a good and safe harbour, teeming with fish: an "Eagle Ray," weighing at least 300 lbs., was caught in the seine, and, despite its somewhat repulsive appearance, was eaten by the ever-hungry sailors. The town is a most wretched little place, and the country for miles round is a waste of naked rock and yellow sand, a few stunted Mimosas and other shrubs, bearing about as many leaves as an average birch-broom, just redeeming it from utter sterility. A few miles inland, the country appears to improve a little, but I had no opportunity of going far from the town. I got a few of the common Callao beetles here, and the only moth I took was, to my surprise, a fine and well-marked specimen of *Agrotis saucia*. Another *Agrotis*, which I cannot distinguish from *A. obelisca*, was caught on board the ship off Huanchacho, a short distance to the southward of Payta.

On the 25th, we entered the Guayaquil River, and anchored for the night at Puno, 40 miles below the port of Guayaquil, whither we proceeded the next morning. The river-banks, all the way up (except near Puno, where there are some low hills), are of a very flat and swampy character, covered with a most dense and luxuriant forest, the trees in many places being really gigantic. The aspect of the forest is, however, somewhat monotonous, the trees presenting but little variety, and scarcely a flower of any sort to be seen; but after the wretched Peruvian coast, the sight of such a glorious extent of green foliage was indeed refreshing to the eye.

Guayaquil is a busy and thriving-looking town, much superior in appearance to Callao: the environs are for the most part swampy and level, intersected with narrow ditches and creeks, the banks of which swarm with land-crabs. At the back of the town are a few hills of moderate height, covered with thorny brushwood. During the four days we stayed here, I added about 30 species of butterflies to my collection: none of them were very large or showy, perhaps the handsomest being the striking, though common, black and crimson *Anartia Amalthea*. A species of *Ageronia* was fairly plentiful on tree-trunks, but was very difficult to secure; and I may also mention some pretty species of *Thecla* (one almost entirely bluish-white above and beneath); a very minute "blue," not unlike our *P. Alsus* in aspect, but scarcely half the size; a *Phyciodes*, like a miniature *M. Athalia*; two or three handsome skippers, &c. I do not think I saw a single beetle: the most abundant insects were decidedly mosquitoes, of the hungriest description.

We had a pleasant passage of a week's duration from Guayaquil to Panamá, arriving at the latter place on October 7th. Here we remained for about seven weeks, and I think I may safely affirm that I made the most of my time, as I succeeded in obtaining at least 150 species of butterflies, scarcely one of which I had seen before, besides a good many moths and other insects. Beetles were, however, as at Callao, singularly scarce: I got one or two fine Elaters and *Brenthidæ*, some Lamellicorns (*Phanæus*, &c.), *Cassididæ*, and *Chrysomelidæ*, but not a single Longicorn or *Buprestis*! though I fear I must confess that the *Lepidoptera* engrossed most of my attention. I am afraid, too, that I was not there at the best time of year, it being the fag-end of the rainy season; the mornings, it is true, were usually fine enough, but heavy clouds usually began to form about 11 a.m., terminating in a deluge of rain two or three hours later: very few days were fine throughout. The heat, although not really very great (seldom reaching 85°), was extremely oppressive, from the dampness of the atmosphere.

The town of Panamá is built on a low rocky spit, from which an extensive reef, partly dry at low water, runs out for nearly a mile, and considerably lengthens the passage on shore, as it cannot be safely crossed in a boat: the anchorage for large ships is about three miles from the town, as the crow flies, under the lee of the little verdant islands of Perico and Ileñao. It is far more picturesque, with its ancient stone walls and red-tiled houses, than the collection of whitewashed mud huts and wooden shanties which pass for towns on the Chilian and Peruvian coasts; there is an extensive suburb of palm-thatched bamboo huts, among which pigs, dogs, fowls, and little niggers revel in happy community of freedom and dirt. The surrounding country, for four or five miles at least, is not much cultivated, and presents a beautifully undulated and varied surface, for the most part covered with dense bush, with fine clumps of large timber here and there. My chief collecting ground was a steep and well-wooded hill, about 550 feet high, immediately behind the town, called the "Cerro de Ancon." Here I spent many a pleasant afternoon, wandering about the shady lanes and pathways which intersect the wood, and revelling in tropical vegetation and tropical insects. I often returned to the ship with a wet jacket, but never without something new to me, in my well-filled collecting-box and helmet. As I am all alone here, and far from books and collections, I cannot venture to name one-fifth of the insects I met with, but I have managed to puzzle out a few of the butterflies, &c., by the aid of Chenu's "Papillons Diurnes et Nocturnes," which I have by me.

The tropical American genera, *Mechanitis*, *Ithomia*, and their allies do not appear particularly well represented at Panamá, as I met with very few species—though I believe they are more abundant earlier in the year. *Satyridæ*, on the contrary, are very numerous, many pretty little species of *Euptychia* (some nearly white), occurring in woody places, and a handsome and curiously-shaped brown *Hetæra* being not rare in the darkest shady corners. The grandest butterflies are the big *Morpho Peleides* and *Caligo Teucer*, both of which are not uncommon, and the first is a most magnificent object, as it flaps along a wood-path, with the rays of a tropical sun gleaming on the lustrous blue upper-side of the wings. *C. Teucer* haunts the deep shades of the thickets, and has a provoking habit of dodging into dense underwood when pursued. The under-side of a fine specimen (not often seen, by the way) is really beautiful, with its delicate pencillings of ochreous and grey, and its great yellow-ringed ocelli, like the eyes of an owl. A large, moth-like, orange and brown insect, which I think is *Dynastor Darius*, comes out not rarely about sunset, but flies too high to be caught: the only one I have was bred from a huge whitish and brown chrysalis, which I often met with on tree-trunks and walls, but all empty, except this one. I saw hundreds at Colon, on the Atlantic side of the isthmus, but all vacated by the perfect insect. A large black and white *Brassolis?*, five inches in expanse, is rare. *Heliconius* only occurred to me as the common but handsome black and crimson *H. Melpomene*, and a large, yellow-streaked black species: both are common. *Colænis Phærusa*, a very handsome fulvous and brown insect occurs in grass fields, with a pretty *Junonia* and *Agraulis vanillæ*: another *Colænis*, almost entirely fulvous above, is common in lanes, &c.

Several species of *Phyciodes*, pretty little insects related to *Melitæa*, &c., are abundant among grass, as is also *Anartia Fatima*, a handsome black-brown butterfly with a cream-coloured transverse bar and some small crimson spots. One of the most beautiful and remarkable insects is a species of *Ageronia*, a butterfly about 2½ inches in expanse, of a grey ground-colour, exquisitely marbled with shades of whitish and reddish, in a most intricate pattern. It settles on the trunks of trees with the wings fully expanded, like a *Boarmia*, and always head downwards: when approached, off it goes with great speed, making at the same time a loud and most singular snapping or crackling noise, which I can best compare to the sound of a slight electric spark, at intervals of one to five seconds. This sound is particularly distinct when the ♂ is chasing the ♀, and I have heard it a distance of at least ten yards: I think it is produced by both sexes. *Victorina Steneles* a large and handsome butterfly, brown, with large blotches of pale leaf-green, was not uncommon, but rarely found in good condition: a new brood was coming out just as I was leaving. Another very showy insect, *Biblis Thadana*, rich dark brown in colour, with a vivid crimson sub-marginal band on the hind-wings, occurred to me only singly. I found some twelve or fourteen *Erycinidæ*, some of them handsome little insects, but none of the more brilliant species fell to my share. They are funny little fellows dashing about actively in the wood-paths and openings, and always settling on the under-side of leaves with the wings fully extended. *Theclæ* aud *Polyommati* were represented at the time of my visit by a few not very conspicuous species: *Terias*, on the other hand, were most abundant, at least 8 species occurring of all shades between pure white and deep orange: *Callidryades*, though not rare, were difficult to obtain, they were so active. Indeed, I may mention that nearly all the larger butterflies, at least, had to be caught on the wing: I did not meet with a single attractive flower, and the insects all seemed to disdain mud, excrement, fallen fruit, sap, and other traditional tropical attractions. I saw only four species of *Papilio*, of which the fine but common *P. Thoas* was very frequent, dashing along the lanes at great speed and very hard to obtain in good order: *P. Polydamas* was not rare in the more open places, and a lovely species (either *P. Erythalion* or *Vertumnus*), velvety-black, the ♂ having a large green blotch on the fore-wings, and a carmine blotch on the hinder pair, these blotches in the ♀ being respectively white and salmon colour, is common in the denser parts of the woods. The ♀ is closely mimicked by the day-flying *Bombyx*, related to *Hypercompa*, &c., which although smaller, is wonderfully like it on the wing, and frequents the same places. As for the Skippers, their name is legion, they seem absolutely endless, and I used to get two or three fresh species almost every day I went collecting. I have at least 50 species of all sizes, from half an inch to nearly two inches in expanse: a large proportion of them are plain brown, with a more or less distinct curved transverse band of white, yellow, or hyaline spots on the fore-wings: but some of them are very handsome insects, especially those of the genus *Pyrrhopyga* (blue-black with crimson collar and tail, and white fringes). Some of the genus *Thymele* are furnished with very long tails to the hind-wings, of different lengths in the two sexes: others are brilliantly glossed with blue, notably a common species of *Nisoniades*, about the size of our *N. Tages:* while others again are as dull and sombre in appearance as the aforesaid "Dingy Skipper." The moths appeared to be fairly numerous in species, but there were few large or showy ones: a great *Erebus*, six or seven inches in expanse of wings, was not rare on trunks, and was once or twice caught on board the ship, but was not easy to obtain in good condition.

The ship went over to the island of Taboga, nine miles from Panamá, for six days (October 28th to November 2nd), to coal and give leave to the crew. This is a most beautiful and picturesque little island, and as good as, or even better than Panamá as a locality for insects. During the six days I took 80 species of butterflies, 18 of which I never saw on the mainland. Among these I may mention a pretty black and white insect, not unlike our "White Admiral" in appearance and habits: a grand green and black Nymphalid, of the genus *Prepona*, a *Chalybe?* like a very large stout *Thecla*, mostly light bright blue above, the under-side being of the richest metallic green, barred with black and mahogany-red; the hind-wings each bearing two long tails: this is one of the most beautiful insects I have ever seen. There were also some nice *Erycinidæ* and skippers, and three very beautiful fresh Papilios, one being especially handsome, its colour being velvety-black with white spotted fringes, a large spot of most brilliant emerald-green on the fore-wings, and a small crimson spot near the inner margin of the hind-wings, the inner marginal fold of hind-wings being filled with very long dense ashy-white hair. Among the beetles, I was much pleased to get a fine specimen of the huge *Buprestis Goliath*, which was brought to me by one of the sailors.

We left on November 25th, for Callao: and despite heat, mud, tropical showers, mosquitoes, ticks, and other small annoyances, there are few places from which I carry away so many pleasant recollections, as I do from Panamá. Callao was reached on the 6th December, the weather was again fine and pleasant, but I found very little to do in the way of collecting, still, a few interesting additions occurred, notably a fine black and yellow *Papilio* related to *P. Thoas:* this was rare in the perfect state, but I was lucky enough to find the larva in plenty on a small patch of parsnips, and have reared a fine series. I also got a very fine hawk-moth, something like a very large *Sphinx convolvuli*, but seven inches in expanse of wings, on board the ship: also the beautiful moth *Noropsis fastuosa*, which is figured in one of the early numbers of the Ent. Mo. Mag., from a specimen taken in England. Among the *Coleoptera*, I found a very fine long-legged pale brown Lamellicorn, with large horns on the head and thorax of the male, which sex attains the length of two inches: this is, I think, a species of *Golofa*. It was not rare, sitting on grass-stems and foliage, and flying at sunset like a cockchafer. A fine large species of *Trox* is also perhaps noteworthy: and while speaking of the Callao insects, I must not forget to mention the too-well-known Chigoe or "Jigger" *(Sarcopsylla penetrans)*, a most minute flea which abounds in the dust, and (the ♀, at least) burrows under one's toe-nails whenever it can get a chance. I had three or four extracted from my feet, the insect becoming distended with eggs to the size of a small pea, and producing a curious tickling or itching sensation, which (whatever some authors may affirm to the contrary) is the reverse of pleasant. Another of the many disagreeables of Callao is a phenomenon locally known as the "Painter," which is peculiar to this and one or two other Peruvian ports. The water in the harbour suddenly assumes a curious opaque milky-white colour, and emits a most horrible odour of sulphuretted hydrogen with a dash of rotten fish. This delightful phenomenon occurs, on an average, every four or five days in December and January, and seldom lasts less than twenty-four hours: the white paint on the boats, &c., being utterly spoiled by the action of the sulphuretted hydrogen, and turned quite black. I have an idea it is caused by some disturbance of the bottom, such as a slight earthquake-shock, as the mud emits exactly the same smell, and is full of diatoms and other organic bodies, but it is curious that it should be confined to so short a period of the year.

At the end of December, we had a cruise to the southward as far as Mollendo, a small port 400 miles from Callao. I had but one opportunity of landing here, on December 26th: the country is miserably barren, and covered with drifts of white volcanic ashes, said to have come from the great Misti volcano behind Arequipa, some 70 miles distant. Water is brought in pipes from the mountains, and a few vegetables, &c., raised by irrigation. I found two or three ordinary Callao *Lepidoptera* in great numbers, as well as numerous larvæ of the fine hawk-moth *Sphinx 5-maculata*, feeding on all sorts of wild and cultivated *Solanaceæ*.—James J. Walker, H. M. S. "Kingfisher," Callao, Peru: *6th February*, 1882.

Voluntary submergence by the female of Phryganea.—Referring to Mr. J. J. King's observations recorded in last month's Ent. Mo. Mag., on the curious behaviour of a ♀ *Phryganea obsoleta*, it may interest you to know that a somewhat similar proceeding on the part of a ♀ *Phryganea striata* has come under my notice. At a pond near this place I saw the insect in question several times get partially under the water; and once near the margin, where the depth was only 3 or 4 inches, it walked down a grass stem to the bottom where it remained for a minute or so. While submerged it appeared to me to be making an effort to get quit of the large egg-mass which it carried, by dragging its abdomen over the grass-stem. It appeared quite at home on the surface of the water, as it crossed the pond, which is nearly 20 yards broad, several times, attended by some half-dozen sticklebacks.—K. J. Morton, High Street, Carluke, N.B.: *17th June*, 1882.

[Messrs. King and Morton's interesting observations entirely confirm those made by Mr. Hyndman, at Belfast, in 1833 (first quoted in Curtis's "British Entomology"). I have more than once seen the ♀ on the surface of the water as noticed by Mr. Morton, but never succeeded in observing it descend beneath the surface.—R. McLachlan.]

ANNOTATED LIST OF BRITISH *ANTHOMYIIDÆ.*

BY R. H. MEADE.

(*Continued from Vol.* xviii, *page* 270).

17. LASIOPS, Meig.

Gen. ch.—Eyes of male hairy, contiguous or sub-contiguous; arista sub-pubescent or bare; abdomen ovoid or narrow, and depressed; alulets small, lower scale nearly or entirely covered by upper one; wings with the third and fourth longitudinal veins parallel, or a little convergent, and with the anal vein prolonged to the margin; legs with the hind tibiæ ciliated on both sides. Eyes of female only slightly pubescent.

1. CTENOCNEMA, Kowarz. | 2. ROEDERI, Kz.
3. MEADEI, Kz.

I have remarked under the genus *Trichophthicus* that the generic name *Lasiops* had been reserved by Rondani and Kowarz for a small group of Anthomyds which have hairy eyes, naked aristæ, very small alulets, and prolonged anal wing veins. Zetterstedt described two species in his great genus *Aricia* which belonged to this group (*A. glacialis* and *A. eriophthalma*), and Rondani one in his genus *Lasiops* (*L. anthomyinus*). None of these have been yet found in Britain, but Herr Kowarz, in his elaborate monograph, has determined five others in addition to the above, three of which belong to the British Fauna. These little flies closely resemble each other, and only differ by slight structural points, so that they may easily be confounded, and are very difficult to discriminate. They all have the back of the abdomen marked by a broad black longitudinal stripe, as well as by transverse black bands on the edges of the segments, so that the surface is divided into eight squarish grey patches, much in the same way as the abdomen of *Anthomyia radicum*, Linn., is marked; hence the name of *L. anthomyinus* given to the Italian species by Rondani.

L. CTENOCNEMA, Kz.

The eyes in the male of this species are contiguous in the middle, and covered thickly with longish hairs; the thorax and scutellum are shining and brownish-black, the former is indistinctly striped, and whitish-grey on the sides and front edge; the abdomen is oblongo-conical, pointed at the apex, which is black and shining, with the sub-apical appendages (*hypopygium*) small, and the ventral lamellæ projecting and somewhat hairy; the alulets have the scales slightly unequal, and are fringed with long yellowish hairs; the wings have a brown tinge, with the third and fourth longitudinal veins decidedly convergent, and the external transverse veins oblique; the legs have the hind tibiæ evenly ciliated with bristles of moderate length along the whole of their externo-posterior surfaces, and also with finer bristles or hairs on their internal and anterior sides; the pulvilli are small. Common in Yorkshire.

L. ROEDERI, Kz.

This species principally differs from the last by having the dorsum of the thorax and scutellum grey instead of black, and by the former being distinctly striped with three and sometimes five lines; the wings have the third and fourth longitudinal veins parallel until near their extremities, when they become slightly convergent; the armature of the hind legs is similar to that of *L. ctenocnema*. I have captured a few specimens of this little fly near Bradford.

L. MEADEI, Kz.

This species closely resembles the other two in size and form, the length of them all being about 4 mm. (2 lin.); it differs from both *L. ctenocnema* and *L. Roederi*, however, by having the hind tibiæ ciliated on their externo-posterior surfaces with only a few bristles of irregular lengths along the upper half, instead of with a regular even row down the whole length; the eyes also have shorter hairs; the thorax is blackish, with three distinct stripes; the alulets are fringed with a few black hairs, the third and fourth longitudinal veins are quite parallel, or sometimes slightly divergent; and the pulvilli are larger than in either of the preceding species. Found sparingly near Bradford.

I know of no decided character by which the females of the above three species can be distinguished from each other; those which I possess are rather smaller than the males, are grey in colour, have the eyes very slightly and indistinctly pubescent and widely separated, the frontal space occupying about a third of the width of the head. This space contains a black central stripe, bordered on each side by a whitish-grey margin, which is about one-third the width of the middle stripe. The thorax is light grey, with five pale brown longitudinal lines. The abdomen is grey, with a longitudinal black central stripe, and some transverse marks which are indistinct, and do not reach the edges of the segments. The wings are clear. The legs have the hind tibiæ ciliated only with a few spines on the outer sides.

Before proceeding with the enumeration of the remaining species of *Anthomyiidæ*, I must make a short digression. The genus *Anthomyia*, as restricted by Meigen in his supplementary (7th) volume, is so large, even after the species belonging to *Ophyra*, *Homalomyia*, and *Azelia*, which he included, have been abstracted from it, that it is necessary to sub-divide it further. This sub-division has already been attempted by R. Desvoidy, Macquart, and Rondani; the first author carried it, however, too far, and the groups which the others formed are very artificial and unsatisfactory, so I shall venture to propose a new arrangement.

In the first place, the pale-legged and pale-bodied species must be separated from the black-legged ones, and replaced (with one exception) in the genus *Pegomyia* of Desvoidy and Macquart. By both these Dipterologists the genus was restricted to those species which have the bodies, as well as the legs, always more or less yellow; but I think it will be better to include in it all those with pale legs, whether the abdomen is yellow or not, for there are several species, as *A. hemorrhoa*, Zett., and *P. hyoscyami*, Desv., which have the abdomen sometimes partly yellow and sometimes entirely grey.

With respect to the black-legged species, I shall retain the name of *Anthomyia* for a small group (embracing Desvoidy's genera *Anthomyia* and *Egle*) which is more highly developed than the others, having the alulets rather larger with the scales unequal in size. The remainder of them must be again separated into two divisions; for the first of which I shall adopt Macquart's name *Chortophila*, restricting it (as Macquart did in theory) to those species which have the abdomen more or less thickened and cylindrical. To the second and largest division, which will include all those species which do not belong to either of the other groups, I shall give Desvoidy's name of *Phorbia*.* The flies in this group have the abdomen narrow and elongated, or oblong, and flattened.

The above genera may be thus tabulated:

A. Abdomen and legs black or grey.
  B. Alulets with the scales unequal in size.
      Gen. 1. ANTHOMYIA, Meig.
  BB. Alulets with the scales equal in size.
    C. Abdomen in ♂ sub-cylindrical.
      Gen. 2. CHORTOPHILA, Macq.
    CC. Abdomen in ♂ narrow or oblong, and depressed.
      Gen. 3. PHORBIA, R. Desv.
AA. Legs always, and body generally, partly pale (rufous or testaceous).
    D. First longitudinal vein armed with spines.
      Gen. 4. ACANTHIPTERA, Rond.
    DD. First longitudinal vein unarmed.
      Genus 5. PEGOMYIA, Desv.

18. ANTHOMYIA, Meig.

Egle, p. R. Desv.

Gen. ch.—Eyes bare, contiguous or sub-contiguous in the males; arista pubescent or bare; forehead and face slightly prominent; epistome often projecting; abdomen ovoid or oblong, and depressed, often much thickened at the apex in the males; alulets rather small, but with the scales unequal in size; wings with the third and fourth longitudinal veins parallel or slightly convergent at their extremities, anal vein prolonged to the margin; legs always black or grey.

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* The species placed by Desvoidy in this genus belong to his "*Anthomyæ herbicolæ.*" See Essai sur les Myodaires, p. 559.

1. PLUVIALIS, Linn.
    procellaris, Rond.
    imbrida, Rond.
2. ALBICINCTA, Fall.
3. PRATINCOLA, Panz.
4. RADICUM, Linn.
    vulgaris, R. Desv.
    brassicæ, Wdm.
5. SULCIVENTRIS, Zett.
6. OCTOGUTTATA, Zett.

A. PLUVIALIS, Linn.

This common pretty spotted fly varies a good deal, the spots often coalescing so as to alter the design on the thorax and abdomen. Two of the varieties thus produced have been exalted by Rondani into distinct species, but they possess no real specific distinctions.

A. ALBICINCTA, Fall.

This little species bears a good deal of resemblance to the last, but, besides being very much smaller, differs in having the thorax black, with two white spots on the hinder part in front of the scutellum. The abdomen is marked as in *A. pluvialis*, being white with a dentated black band at the base of each segment. Not common.

A. PRATINCOLA, Pz.

This species has the abdomen marked in a very similar manner to those of the two preceding ones, but the thorax is peculiarly figured, being of a whitish-grey colour, with a single black elongated rhomboidal mark in the centre of the posterior part. It is about the same size as *A. albicincta* (about 3 mm., 1½ lin.), and is also rare.

A. RADICUM, Linn.

This excessively common little fly, which, as its name imparts, feeds in the larva state upon the roots of plants, especially on those of the cabbage tribe, is often confounded with other species. It may be recognised by its projecting epistome; by the unequal sized scales; by the thorax being black, and marked in the male by two short, grey, narrow stripes (rather than by three wide black ones, as is usually stated); by the rather short, wide, somewhat pointed abdomen, with a longitudinal dorsal black mark, crossed by three transverse straight black lines, extending of an even width to the margins; and by the third and fourth longitudinal veins of the wings being slightly convergent at their extremities.

A. SULCIVENTRIS, Zett.

This species bears a good deal of resemblance to *A. radicum*, but is less; has the antennæ much shorter; the arista more pubescent; the thorax without any distinct stripes on the dorsum, only having an irregular white line on each side; and the abdomen less pointed, and thicker at the apex as well as differently marked; it being of a dull grey colour, with three transverse sulci on the dorsum, and a rather indistinct longitudinal black stripe, which appears in certain lights to be dilated into triangular spots, opposite the sulci or depressions. Common in pastures.

A. OCTOGUTTATA, Zett.

This little species (which only measures about 2½ mm.) also has considerable resemblance to *A. radicum*, being marked in a very similar way on the abdomen, by a longitudinal and three transverse stripes, which divide the surface into eight light grey square spots; the thorax, which is black, has also two short white stripes on its anterior parts: it differs, however, from *A. radicum* in having both the face and epistome less prominent, the third and fourth longitudinal wing veins quite parallel at their extremities, the abdomen narrower, sub-cylindrical, more hairy, and furnished with two projecting lamellæ beneath the apex in the male, which is but little thickened; the alulets are also smaller in proportion than in *A. radicum*, but still have the scales slightly uneven in size.

I have only seen one male specimen of this rare little fly, which I captured near Bradford in July, 1875.

(*To be continued*).

A LIST OF THE BUTTERFLIES CAPTURED IN BARRACKPORE PARK DURING THE MONTHS OF SEPTEMBER, 1880, TO AUGUST, 1881.

BY G. A. J. ROTHNEY.*

Barrackpore is situated on the right bank of the river Hoogly, 16 miles above Calcutta. The park comprises a strip of land on the river-bank some two miles long by about 1200 yards broad. Insect life, in the way of butterflies, commences to be active about March, and increases till May, when there is a slight lull till the rains commence about the 15th or 20th June. Insects are then very plentiful till the end of August, when another lull occurs till about the breaking up of the rains—the end of September, or first week in October—when the collecting season finishes up with a fine burst of life, lasting to about the 20th October; after which insects gradually disappear, few butterflies, &c., being seen after the end of that month. The flowers most frequented by butterflies in the park are: *Duranta Plumieri*, *Quisqualis indica*, *Poinciana pulcherrima*, *Mussænda macrophylla*, and a tree with a small white hanging blossom (name not known), but the first-named is by far the most attractive.

EUPLŒINÆ.

Limnas Chrysippus, Linn., *Salatura Genutia*, Cram., *Tirumala Limniaca*, Linn., very common. March to October. Heavy, lazy flight.

Parantica Aglea, Cram., rare.

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* Communicated (with description of a new species) by Frederic Moore.

Crastia Core, Cram., very common. March to October. Heavy, lazy flight. Frequents the shade of Banian trees, &c. Very fond of settling on damp ground. Frequently taken *in coitu*.

[*Isamia Rothneyi*, Moore (n. sp.), male. Upper-side olive-brown; basal area darkest: fore-wing with a sub-marginal row of small whitish spots, and a marginal row of smaller spots, both rows decreasing in size towards the costa; sericeous streak short and broad: hind-wing with a pale flesh-coloured discoidal patch; a sub-marginal row of oval, and a marginal row of smaller, whitish spots. Expanse, 3¼ inches.

In colour and pattern of markings, this interesting new species resembles the very common *C. Core*, for which insect Mr. Rothney mistook it. One specimen only occurs in this collection, and it is the only example known to me. Its nearest ally is a Ceylon species (*I. Sinhala*).—F. Moore.]

SATYRINÆ.

Lethe Europa, Fabr., one specimen only captured.

Melanitis Ismene, Cram., common, but difficult to catch. Found in shade, either under bamboo or under mangoe topes. When disturbed is fond of settling in cactus hedges.

Calysisme Samba, Moore, *Blasius*, Fabr., *Drusia*, Cram., *Perseus*, Fabr., *indistans*, Moore, common. Fond of shade. Settle mostly in long grass.

Elymnias undularis, Drury, male common; female rare. Settles in dense foliage, close to the trunk.

NYMPHALINÆ.

Charaxes Fabius, Fabr.

Symphædra Nais (*Thyelia*, Fabr.). Two specimens only captured.

Discophora Zal, Westw., rare. Fond of shade.

Precis Laomedia, Linn., not common.

Junonia Orithya, Linn., rare; *Œnone*, Linn., rare; *Lemonias*, Linn., *Asterie*, Linn., *Almana*, Linn., common, from early March to end of October. Fond of the sun and flowers.

Ergolis Ariadne, Linn., *Merione*, Cram. Habits as above.

Limenitis Procris, Cram., rare.

Neptis Varmona, Moore, *Kamarupa*, Moore, common, but difficult to capture. Fond of the sun.

Apatura Bolina, Linn., *Jacintha*, Drury, *Misippus*, Linn., not uncommon. Habits much the same as in the European Purple-Emperor, except that they are contented with a lower perch.

Atella Phalanta, Drury, common, from early May to September.

Cirrochroa Anjira, Moore. One ♀ specimen only captured (Identical with the *Andaman* type).

ACRÆINÆ.

Telchinia violæ, Fabr. A hot season insect; delights in the sun. Not common.

ERYCINIDÆ.

Abisara suffusa, Moore. May to October. Not common.

LYCÆNIDÆ.

Anops Thetys, Drury. Single specimens may be taken from May to September.

Pithecops Zalmora, Butler.

Chilades Varunana, Moore, *Laius*, Cram.

Tarucus Theophrastus, Fabr., rare; *Plinius*, Fabr., rare.

Castalius Rosimon, Fabr., rare.

Jamides Plato, Fabr., rare. June. Fond of the sun, and settling on damp ground.

Catochrysops Strabo, Fabr., rare; *cnejus*, Fabr., rare; *Pandava*, Horsf., common; early March to end of October, and may be found during the cold months of November to February.

Zizera diluta, Felder, *Sangra*, Moore. Habits as above.

Lampides Ælianus, Fabr. Found in the shade. Has a quick, restless flight. May to August.

Polyommatus bæticus, Linn., rare.

Lycænesthes bengalensis, Moore, rare. July.

Virachola Isocrates, Fabr., rare. July and August.

Rapala schistacea, Moore, rare. August.

Aphnæus Etolus, Cram., common. May to September. Fond of the sun.

Tajuria longinus, Fabr., rare. July.

Hypolycæna Talindra, Horsf., rare. July.

Loxura Atymnus, Cram. Found in the shade of bamboo topes. Has a slow, weak flight.

Mahathala Ameria, Hewits., rare, one specimen only. July.

PIERINÆ.

Nychitona Xiphia, Fabr. (*Nina*, Fabr.), common in shady lanes, May to September. Never seen in the sun. Has a slow, weak flight; fond of ditches.

Terias Hecabe, Linn., very common. Found everywhere. March to October; especially during rains. A lover of sunshine. *Purreea* and *simulata*, Moore, both rare. *Drona*, Horsf., rare; during the rains.

Catopsilia Catilla, Cram., not uncommon during the rains. July and August. *Crocale*, Cram., very common, especially during the rains; a lover of sunshine and flowers. The variety (*Endeer*) occurring at the same time. *Pyranthe*, Linn., very common during the rains. There is a faded (?) or dull dirty-coloured form that appears with this insect, so constant in its uniform appearance, that it almost suggests a variety or species (?). This is generally found during the rains, and also early in the year. It is not very common. *Gnoma*, Fabr., *Ilea*, Fabr., not common.

Ixias latifasciata, Butler, *Marianne*, Cram., rare. Appear during the rains. Most difficult to capture: have a powerful and very dodging flight.

Huphina Evagete, Cram., *Zeuxippe*, Cram., *Hira*, Moore, common in the rains. Fond of flowers, especially *Duranta Plumieri*.

Catophaga Paulina, Cram.: two specimens only taken during the rains; *Darada*, Feld., one specimen only.

Belenois Mesentina, Cram., one specimen only.

Nepheronia Gala, Feld., common: May to October; *Hippia*, Fabr.

Delias Eucharis, Drury: the commonest Barrackpore butterfly. In numbers from April to October.

PAPILIONINÆ.

Pathysa Nomius, Esper., rather uncommon. Frequents the flowers of *Duranta Plumieri*.

Zetides Doson, Felder. Habits, as above.

Orpheides Erithonius, Cram., extremely common, from end of March to end of October. A dark, yellow variety is also found at the same time and places, but is comparatively rare. This latter has a much stronger mode of flight, and is much more difficult to capture. The difference of action is almost sufficient to suggest a difference of species.

Laertias Pammon, Linn., common. March to October. The dimorphic females (*Polytes* and *Romulus*) much less frequently met with.

Menelaides aristolochiæ, Fabr. (*Diphilus*, Esp.), very common: March to October; *Hector*, Linn., common: March to October.

Chilasa dissimilis, Linn.; *Casyapa*, Moore, common during the rains.

HESPERIIDÆ.

Badamia exclamationis, Fabr., very rare.

Parnara Bada, Moore.

Suasta Gremius, Fabr. (*Divodasa*, Moore), very rare.

Matapa Aria, Moore, very rare.

Chapra Agna, Moore, extremely common, from March to October.

Telicota bambusæ, Moore, and *Angias*, Linn. Habits, as above. A favourite food of the Indian hornet (*Vespa cincta*).

Halpe Beturia, Hewits., rare. September.

Astictopterus Salsala, Moore. September.

Udaspes Folus, Cram., rare. Odd specimens from May to August; in long grass.

Hesperia Galba, Fabr., common, May to September.

April, 1882.

NATURAL HISTORY OF *HELIODES ARBUTI*.

BY WILLIAM BUCKLER.

It is with extreme gratification that I now find myself giving the history, from the egg, of this little sun-loving species, which I owe to the most kind and persevering help I had the pleasure to receive from Mr. H. T. Stainton in 1880, and again in 1881.

In the former year on the 23rd of May, I received a cluster of about eight eggs, resulting from a moribund female after being a short time in a killing bottle of poison, but long enough, as it proved, to have destroyed their vitality.

On 26th of the same month, I was elated on receiving alive five captured examples of the moths; as two of them were females I imprisoned them and the most lively male together, in a pot containing sprays of *Cerastium glomeratum* and *vulgatum* covered with leno, whereon they were occasionally fed with a drop of sugar and water which the male imbibed plentifully, the females less often, and one of these soon left the leno and alighted on the *Cerastium* and sat there with extended antennæ and wings gently vibrating as though intending to lay: the next day was dull and cloudy, and the two on the leno only flew around whenever a chance ray of sun gleamed on them, but late in the afternoon they made me hopeful of success when I saw they had paired about half way down on the side of the pot, where they remained five hours and a half together; they were fed for five more days and fresh *Cerastium* added, but in vain, as they died without either female depositing even a single egg.

As a forlorn hope I squeezed from the abdomen of the gravid and dead female several eggs, and after a few days I fancied one of them at least was changing colour, and in the afternoon of June 7th this one really began to hatch, and while noting down its details, which were well exposed to view, I could see the little larva making continual efforts to free its hindmost segment from a part of the shell adhering to the other eggs, but it was unable to extricate itself, and by next morning had perished.

With the return of May in 1881, I felt greatly encouraged to persevere, on finding that my previous failure had by no means diminished, but perhaps increased, the kindly interest taken by Mr. Stainton in elucidation of the early stages of this insect, and he lost no time in giving me the result of his observations, both in literature and in the field; so that I soon learned what flowers were most visited by it—for, as may well be supposed, some doubt of the food plant had naturally by this time occurred to me—and that *Cerastium arvense* was the plant assigned to *H. arbuti* by Carl von Tischer, who communicated this to Treitschke and afterwards to Freyer, as quoted by both, whom Guenée appears to have followed; I also learned that *C. arvense* does not grow in the district where *arbuti* is found flying by Mr. Stainton, but that *C. vulgatum* does, plentifully, of which he kindly sent me a few plants for potting on the 21st, and on the next day as many as twenty specimens of *arbuti*, all in lively condition.

The moths were distributed in three pots of growing plants, protected with glass cylinders and leno covers; two of the pots contained the *C. vulgatum*, and the third pot some different plants of the *Caryophylleæ*, besides in each some tufts of *Bellis perennis*, whose blossoms constantly attracted and helped to nourish them, as did also sugar and water frequently supplied; in the evening of the 23rd, I saw one egg had been laid on the glass cylinder, and on the 25th, another egg on the opposite side of the same glass enclosing some of the *Cerastium.*

On the 1st of June, a friend brought me some plants of *C. arvense* in full bloom, kindly obtained near Lewes, as the plant does not occur in this locality, and these were potted and protected with glass just in time for a second consignment of five living *arbuti* from Mr. Stainton, who yet in a day or two supplemented them with four more; an egg was very soon laid on a leaf of *arvense,* and on the 7th, I saw another egg was laid on the base of the calyx near the stalk of an expanded flower of one of the same plants; these two eggs I cut off and sent to Mr. Hellins for his examination, who had an accident which settled the first egg, and the second he pronounced to be addled.

Meantime I had often looked in one pot of *C. vulgatum* wherein no egg could ever be detected while the moths were alive nor after the cylinder was taken away—yet, on the 8th of June, I was greatly delighted to see a larva quietly sitting on a stem, in an attitude rather suggestive of the letter S—after recovering equanimity from such an agreeable surprise, I became aware of a hole in the side of the seed capsule a little above it, and soon detected a second larva sitting quietly in the same manner, and then a third larva partly protruding from one of two contiguous capsules, and next, the hole in another capsule from whence the second larva had eaten its way out, like the first evidently soon to moult, a process they both accomplished in evening of the 10th, and henceforward lived outside more or less exposed, feeding well on both flowers and unripe seeds; on the 13th, I saw they were again waiting for another moult which occurred a little before midnight of the 14th with one, and with the other at some early hour in the morn ensuing; they soon resumed feeding and had grown decidedly by evening, and continued to eat quite voraciously, but less of flowers and more of seeds, eating out a number of capsules within a few hours, in this reminding me of the *Dianthœciæ*; they were full-fed by 18th of June, when they left their food and lay up motionless for a day and night, as though to purge themselves of their grossness while secreting the needful silk before entering the earth for pupation.

These larvæ conveyed an instructive lesson in showing why I failed the year before to get any eggs laid on sprays of the food plant when *gathered,* also on this occasion the wonderful instinct and prevision, I may say reasoning power, of the parent moth or moths who refused to lay more than three eggs on the few plants confined with her or with them—for there remains the posibility that perhaps three females were confined and each laid one egg, knowing there would be barely enough sustenance for a single larva—but, however this may have been, it would seem that in nature the female would deposit her eggs singly, probably in the corolla or on the calyx of a flower, just here and there one, in proportion to the abundance of the plant.

I know not if this larva had been seen by any human eye since the time of Carl von Tischer, but the time for it to be found in this country had come, for on the 17th of June, I received a further very kind attention from Mr. Stainton in the arrival of a full-grown larva of *arbuti*, which he had gathered by chance while getting some *C. vulgatum* for a Coleopteron in the field where *arbuti* flew; this larva in no way varied from those I had reared, and proved to be only twenty-four hours later in maturing: curiously enough this incident was repeated similarly by the Rev. J. Hellins, to whom I had sent a larva of *arbuti* reared from an egg laid, I presume, *within* a flower of *C. arvense* (as after many repeated close searches I failed to find more than the two before mentioned on *arvense*), and he, returning home with some of that species for food on July 2nd, found a larva of *arbuti* emerging from one of the seed capsules he had gathered.

The egg of *arbuti* is globular, about $\frac{2}{5}$ mm. in diameter, having a slight depression beneath, it seems thin-shelled and finely pitted all over, shining, and is of full yellow colour, turning rather brownish just before hatching on the seventh day.

The newly-hatched larva is white, with brown head and a narrow brown plate on the second segment. After living hidden within a seed-capsule and feeding on the unripe contents for about from fifteen to seventeen days, during which it has got through its earliest moultings and acquired a colouring that assimilates most wonderfully well with that of the capsule of the plant, as it waits outside for its penultimate moult; it has a brown head streaked and spotted with darker brown, and the body is either of a pale watery-green colour or slightly tinged with pinkish-grey, and marked with a dark green dorsal line, a whitish sub-dorsal line, and a stouter white spiracular line, the ventral legs clear and nearly colourless: after this moult it is nearly 6 mm. long, the head and second segment pale brown with slightly darker brown marks, the rest of the body much deeper and richer coloured than before, either a greenish-grey or a pinkish-grey ground —as both varieties occur at this stage, and now the dark slaty-green dorsal line runs in the middle of a broad softened stripe of paler ground-colour than the rest of the back and the side; next comes the whitish sub-dorsal line, and after an interval of ground-colour the perfectly white spiracular stripe, both of these are very conspicuous; though all the ventral legs are equally well developed, it still often assumes its former favourite position while resting, which is very much like that of a half looper, holding on sometimes by the anal and fourth pair of ventral legs only, at other times with addition of the third pair, while the others and all the fore part of the body are held off free, with the head bending downwards forming an arch; after feeding three days the ground colour is lighter and greener and the length when laid up is 11 mm.

After the last moult it attains in four days its full growth, when the length is 20 mm. and stoutish in proportion, of true *Noctua* form with plump twelfth segment, the thoracic segments slightly taper towards the smaller and rather flattened head, the mouth prominent; in colour the head and plate are of a light greenish tint and glossy, the ground of the rest of the body is light green, the dorsal line dark green, the whitish sub-dorsal line is finely edged above with darker green than that of the back and side, the yellowish or yellowish-white spiracular stripe is well relieved along the upper margin by a conspicuous dark green stripe, the spiracles are whitish, finely outlined with black, the tubercular dots are brown but too minute for any but powerfully assisted vision, the belly and legs a rather paler green than the back, the skin soft and smooth; when it has ceased to feed and is laid up all the lines soon disappear, and it is then of an uniform green colour.

The larva fabricates at about an inch or two beneath the surface of the soil a cocoon of earth, with a thickness of wall about 1 mm., or in parts even less, kneaded well together with silk, and slightly attached to a few coarse particles of earth outside, it is of close texture and not very brittle, the general figure is roundish or roundish-oval, and measures about 9 by 6 or 7 mm., the interior is very smooth and just fits the pupa comfortably without room to spare; the pupa itself is of a very dumpy form, with rather a bluntly tapered abdomen, having at the tip two fine thorny points of inconceivable minuteness, and in contact with the compressed old larval skin; in colour the pupa skin is reddish-brown and rather shining, and in length 6 to 7 mm.

The perfect insects were bred, both male and female, in the morning of the 4th, and a female on the 11th, of this month.

Emsworth: *May 12th*, 1882.

DESCRIPTION OF A NEW SPECIES OF *HEMIPTERA-HETEROPTERA* FROM CENTRAL AMERICA.

BY JOHN SCOTT.

The number of individuals of *Hemiptera-Heteroptera* which I have had in my possession for a very lengthened period, either given to me by friends, or otherwise obtained, has induced me, now that I have cleared other matters off, to commence upon their investigation. They embrace examples from Chontales, Bogota, Rio Janeiro, St. Paulo, and other places in the South American Continent; and, beyond the list which it is my intention to give, will, no doubt, furnish several hitherto undescribed species. I shall in every instance add the source from which they came, so that my friends may see that their many little acts of kindness have not been forgotten.

MICTIS (?), Leach.

MICTIS (?) JANSONI.

Ochreous-drab. *Antennæ* black, with very short black hairs, insertion of the 1st joint pale above, 4th with very short, yellow pubescence. *Pronotum* between the fine transverse wrinkles, thickly and finely punctured; sides widely diverging posteriorly, narrowly black, shining, dentate; disc with three fuscous-black longitudinal lines, the side ones shortest, terminating at a deep transverse depression beyond the acute hinder angles; hinder sides waved, narrowly black, toothed; posterior margin straight, with a slight tooth at the extremities of the scutellum. *Scutellum*, disc, anteriorly coarsely, basal third finely, wrinkled, the latter regularly waved from the centre. *Elytra*, except the nerves, very finely and irregularly punctured: *corium* with a narrow, fuscous, longitudinal streak at the base, within the marginal nerve, and two short streaks on the disc: *membrane* pitchy- or slightly olive-brown, shining. *Sternum* ochreous-drab, rugulose-punctate. *Legs* ochreous-yellow: *thighs*, at the apex, dark; *tibiæ* piceous; *tarsi* pitchy-black. *Abdomen*, above and below, brownish-yellow; *connexivum* black, with an almost square reddish-yellow spot on each segment; last segment reddish-yellow, apex black.

Head ochreous-drab, antenniferous tubercles on the upper-side chestnut-brown. *Antennæ* black, clothed with very short, stiffish, semi-erect, black hairs: 1st joint insertion, on the upper-side, narrowly pale brownish-yellow, 4th clothed with a very short, yellow pubescence, causing it to appear of a golden-yellow colour in certain lights. *Rostrum* above, piceous.

Thorax: pronotum ochreous-drab, somewhat shining, finely wrinkled transversely, except a smooth space behind the collar, which is somewhat trilobate, posteriorly, between the wrinkles thickly and finely punctured, and next the hinder angles a few granules; sides widely diverging as they approach the hinder angles, where they are slightly concave, narrowly black, shining, armed with teeth rounded on their tips; disc with three fuscous-black longitudinal lines, the central one extending throughout its entire length from the inner margin of the collar, the side ones about half its length, terminating at a deep transverse depression, extending almost from side to side beyond the hinder angles, gradually becoming shallower as it approaches them; hinder angles slightly raised, produced into a long acute tooth; hinder sides waved, narrowly black, toothed; posterior margin across the scutellum straight, with a slight tooth at the extremities of the latter. *Scutellum* pale brownish-yellow, sides narrowly margined; disc, apical two-thirds coarsely wrinkled transversely, basal one-third finely wrinkled and regularly waved from the centre to the sides, down the middle a somewhat obscure fuscous streak, terminating before reaching the apex. *Elytra* ochreous-drab, except the nerves, very finely and irregularly punctured; *corium*, side-margins almost parallel, slightly concave from near the base to in a line with the apex of the scutellum, marginal nerve at the base fuscous, within the latter a narrow, fuscous longitudinal streak, terminating about in a line with the apex of the clavus; disc with two short brownish or fuscous streaks, the upper one running parallel with the margin of the inner nerve of the exterior basal cell, the lower one below the apex of the exterior nerve of the same: *membrane* pitchy or slightly olive-brown, shining. *Sternum* ochreous-drab, rugulose-punctate. *Legs* ochreous-yellow; *coxæ*, 1st and 2nd pairs, the apex on the inside, narrowly black, 3rd brownish-yellow, apex more or less fuscous. *Thighs*, 1st and 2nd pairs, the apex with a narrow black margin, underneath with two rows of four or five teeth placed at irregular intervals, and not opposite to each other, the 2nd next the apex longest, tip narrowly black, 3rd pair fuscous-brown, shining, with three pairs of teeth next the apex, not placed opposite to each other, near the base a long curved black tooth, its base and apex brown; *tibiæ*, 1st and 2nd pairs piceous, apex brown, with two teeth on the under-side towards the latter; 3rd pair piceous, sides brownish-yellow, with a long curved tooth in the middle on the under-side and three smaller ones next the apex; *tarsi* pitchy-black, with short yellowish or reddish-yellow hairs on the under-side.

Abdomen above, brownish-yellow: *connexivum* black, with an almost square, reddish-yellow spot on each segment before the apex, last segment reddish-yellow, apex black; underneath brownish or slightly fuscous-brown.

Length, 1 in. 3 lin. (Paris).

Although I have placed the above-described insect in the genus *Mictis* ?, I have merely done so to enable me to investigate more fully certain characters, whereby, if found sufficient, I may characterize it under the name of *Apodesmius*.

It (a ♂) was sent by me some considerable time ago to the late Dr. C. Stål, who returned it as unknown to him. It was taken by the late Mr. E. M. Janson (after whom I have named it), at Chontales, Nicaragua.

Lee: 26*th February*, 1882.

Capture of Aphalara nebulosa, Zett.—Following up my note on this species (Vol. xviii, page 275) and believing that the plants of "*Epilobium angustifolium*," on Boxhill, must now have grown to some considerable height, I started, on the morning of the 29th ult., fully equipped and determined to work out Dr. O. M. Reuter's announcement that this plant was the head-quarters of the insect in question. After I had arrived at the spot I began beating the plant into my umbrella, and not two minutes elapsed before I had secured some half-a-dozen specimens of the *Aphalara*, and so I continued taking them for some time, when I desisted, not wishing to exterminate the species. I was further intent on securing the larvæ or nymph-form, but, observing that some numbers were pairing in my collecting bottle, I concluded that this was now an impossibility, so I lay down and examined the plants for the ova. After searching for some little time I noticed that one or two leaves had a narrow longitudinal fold on the margin, turned outwardly; one of these I pulled and opened very carefully, when I discovered the eggs laid in a single row along the centre of the fold. In form they are elongate-oval, narrowed at each end, and standing perpendicularly about ⅛ of a Paris line from each other with one end fixed to the leaf. In colour they are starch-white and easily distinguished. JOHN SCOTT, Lee: 1*st June*, 1882.

Hylecœtus dermestoides, &c., on Cannock Chase.—During a recent visit to Cannock Chase I beat from birch trees the following (amongst many other) species of *Coleoptera*:—*Hylecœtus dermestoides*, *Cryptocephalus coryli*, *C. punctiger*, and *C. fulcratus*. From alders on some boggy ground at the northern side of the Chase, I obtained a large number of specimens of *Lina ænea* remarkable for their brilliant golden-coppery colour.—W. G. BLATCH, 214, Green Lane, Smallheath, Birmingham: *June* 19*th*, 1882.

Pachetra leucophæa at Box Hill.—On the 22nd ult., I visited Box Hill (in company with Messrs. Church), and took a *P. leucophæa*, ♀, at rest on the trunk of a whitethorn; it deposited ova which duly hatched, and the larvæ are feeding well on *Poa annua*.—BENJ. ARTHUR BOWER, Eltham Road, Lee, S.E.: 18*th June*, 1882.

Varieties of Zygæna filipendulæ.—The variety or form of *Z. filipendulæ* alluded to by Mr. C. G. Barrett, in the June number of the Ent. Mo. Mag., in which the sixth spot is only faintly traceable, is by no means uncommon. The late Mr. W. P. Weston had a splendid series from Tilgate Forest, many of them bred, and I have frequently taken a similar variety at Folkestone. The Folkestone specimens, however, not only appear early in June before the majority of *filipendulæ* are out of the larval state, but are smaller and have the border of the hind-wings broader than the Tilgate specimens, especially in the ♀, and I have been somewhat inclined to regard them as hybrids between *trifolii* and *filipendulæ*, and should, therefore, have expected to find that *trifolii* occasionally occurs on the summit of the cliffs to which Mr. Barrett alludes, but, either from its early appearance or from the summit not being so much worked, had been overlooked.

It was a curious circumstance that Mr. Weston's specimens were from a part of the Forest where for several years I had taken the large marsh form of *trifolii*, but never seen *filipendulæ* in any of its stages.

The variety in which the sixth spot is entirely absent is far scarcer; and as, so far as my experience goes, it is confined to ♀ specimens, it would be interesting to know whether the specimen referred to by Mr. Barrett is a ♀ or not.

In the specimens I have seen the absent spot is always to be found on the underside, so, beyond the question of hybridism, no doubt as to identity can exist.—C. A. BRIGGS, 55, Lincoln's Inn Fields: 2*nd June*, 1882.

Lepidoptera at Wicken Fen.—From May 27th to 31st I spent at Wicken, collecting chiefly on the Fen. *Meliana flammea* was common, but most of the specimens I took were much worn; it had evidently been out some time, indeed, a local collector told me he had taken a wasted example so early as May 13th. *Papilio Machaon* was also plentiful, and certainly showed no sign of dying out as yet at Wicken. On Whit-Monday, the 29th, it was flying freely even in a little wood about half-a-mile from the nearest point of the Fen. I found the eggs easily by searching the *Peucedanum palustre* on the Fen. *Arctia urticæ* was just getting out; and *Simyra venosa* was not uncommon, but not easy to catch. Other species included *Strenia clathrata; Coremia unidentaria*, abundant *(ferrugata* was not observed); *Phibalopteryx lignata*, common and fine; *Tæniocampa gracilis*, this is the common *Tæniocampa* of the Fen, its young larvæ were feeding in the top shoots of the *Spiræa; Chilo phragmitellus*, just appearing, I also took full-grown larvæ in the old reed-stems; *Melia sociella*, on palings at Soham; *Halias chlorana*, on the Fen, &c., &c.—Geo. T. Porritt, Huddersfield; *June 6th*, 1882.

Argyrolepia Schreibersiana re-discovered.—On a warm still day, in the middle of May, I happened to be searching poplar trunks for imagos of *Cerura bifida* when I came across a handsome orange *Tortrix*, quite unknown to me. Continuing my search I found that the species was quite abundant, more especially on trunks of elm *(Ulmus suberosa)*, in fact, I took some four dozen in much less than an hour. I sent a couple of specimens to Mr. Warren, of Cambridge, who took them to be *Eupœcilia gilvicomana*, a mistake that Mr. Standish committed *vice versa* when he took *gilvicomana*. I next sent some specimens to Mr. Harwood, of Colchester, who immediately wrote to me suggesting that they were *Argyrolepia Schreibersiana*, an opinion in which Mr. Barrett, of Pembroke, concurred. Mr. Barrett writes, "*Schreibersiana* feeds on elm—so Ragonot tells me, and I think Zeller also. Herrich-Schäffer says on *Prunus padus*, first in leaves and then in twigs; Heinemann that it pupates under bark of trees." I can fully confirm the observations of Heinemann, as the empty pupa cases stick out of the elm bark in considerable numbers. With regard to the locality I will only say that it is very limited in extent, and to disclose it would be to ensure the speedy extermination of the species. I will, therefore, go no further than to state that it is situate in "The Cambridgeshire Fens," that delightfully vague locality so frequently quoted in Mr. Stainton's Manual. I have visited the habitat of this species several times since I discovered it, but have purposely refrained from taking very many specimens. Mr. Stainton gives Yaxley and Cambridgeshire as localities, and I am not aware that it has been taken elsewhere, with the exception of a single specimen captured by the Rev. A. Wratislaw, near Bury St. Edmunds. I hope to work out the economy of this species during the season.—Gilbert Henry Raynor, Hereward Hall, Ely: *June 13th*, 1882.

Ceropacha ridens and Tæniocampa miniosa in Pembrokeshire.—Larva-beating on occasions of excursions of our local Field Club to woods in distant parts of the county last year resulted in the addition of two rather unexpected and interesting species to the local fauna, to wit, *Ceropacha ridens* and *Tæniocampa miniosa*, specimens of both of which have emerged this spring. Consequently, these woods have received some little attention during the past and present months, and larvæ of both species have been found rather freely; those of *miniosa* feeding at first in small colonies on the outer branches of the oak trees, but afterwards, when shaken down by the prevalent gales, making themselves quite comfortable on stunted oak bushes underneath. Unfortunately, many were destroyed by parasites, and I fear more by their companions. Those of *C. ridens* were discoverable by looking up at the large bushes overhanging the wood roads in sheltered places, curled half round underneath the leaves. They are feeding so far quite satisfactorily.—C. G. Barrett, Pembroke: *June 14th*, 1882.

Stigmonota nitidana in Pembrokeshire.—When beating for larvæ in a wood of singularly stunted oaks near the sea, on the 6th inst., a little dark Tortrix fell into the umbrella. Not having seen it alive for a good many years, I was well pleased to recognise the pretty little *Stigmonota nitidana.* Further beating showed that it was not scarce, but also that it was by no means inclined to fall quietly into an umbrella and be boxed; so the net was resorted to, and, after a short time, I found that it actually swarmed in a sunny spot, well sheltered from the rough wind then blowing. The pretty little creatures could be seen sitting on and running about the oak leaves in the sunshine, and by sweeping the leaves with the net, plenty were secured.

Very few other Tortrices were seen. *Roxana arcuana* was not scarce, flying swiftly about the oak trees and bushes, and *Ptycholoma Lecheana* occurred rarely. A few *Sericoris urticana* were doubtless only the advance guard of approaching swarms.—Id.

Dipterous larvæ in the human subject.—At one of the meetings of the International Medical Congress, Dr. W. G. Smith stated that a girl, aged 12, presented herself with the following history. About three months before being seen by a medical man, an ovoid swelling appeared on the outer side of the right ankle, causing her some pain and uneasiness in walking. This swelling gradually shifted its position and slowly moved up the leg, thence towards the right axilla, then down to the elbow, and finally settled on the back of the neck. In this position a small dark spot appeared, an orifice formed, and when pressure was made around this opening, a white grub, nearly an inch in length, protruded and escaped along with some unhealthy pus. Several other similar swellings developed upon subsequent occasions under medical observation, and the medical man extracted other grubs, exactly similar to the first specimen. No cause could be assigned for these curious phenomena. The larvæ were pronounced by competent authority to belong to a Dipterous insect, although the genus could not be satisfactorily determined. There was no sufficient proof of the existence of an *Œstrus* peculiar to man alone. A good abstract from which the above is quoted appeared in the British Medical Journal, 1st October, 1881. I shall feel grateful to any of your readers who will give additional information or references.—William E. A. Axon, Fern Bank, Higher Broughton, Manchester: *June*, 1882.

Two species of Nomada new to the British List.—I am glad to be able to add *Nomada bifida*, Thomson, and *Nomada guttulata*, Schenck, to our list of *Hymenoptera.* The former very closely resembles *ruficornis* but may be known by the bifid apex of the mandibles, those of *ruficornis* being sharply pointed; *guttulata* may be known by the three short black obtuse spines at the apex of the posterior tibiæ, there is a good figure of the apex of the tibia in Dr. Schmiedeknechts' "Apidæ Europææ," pl. iii, fig. 8. I have several specimens of *bifida*, but unfortunately most of them have no note as to locality. A few males, however, have the locality Canterbury upon them, and I hear from Mr. Bridgman that he has specimens taken near Norwich; of *guttulata* I have only a single female, also without note of locality. It much resembles *ochrostoma* but is smaller and rather shorter, and the spines of the tibiæ are very different. I think, if Hymenopterists would direct their attention to this genus, we should probably further increase our list of species, as in many cases the distinguishing characters, though well defined, require careful searching for. Collectors would, therefore, do well to bring home all the specimens they see, as it is nearly impossible in the field to know for certain what species is under notice.—EDWARD SAUNDERS, Holmesdale, Upper Tooting: *14th June*, 1882.

A Marine Caddis-fly.—Since the announcement published in Vol. xviii, p. 278, of this Magazine, I have received the materials forwarded by Prof. Hutton. These consist of a cylindrical, straight, tubular, moveable case, formed of coralline sea-weed, and a slide, on which is a larva (badly crushed), and the fragments of a pupa, from which the perfect insect was ready to emerge (*not*, as Prof. Hutton thought, the perfect insect itself). From the maxillary palpi I can identify it as being that of a ♂ of *Philanisus plebejus*, Walker (= *Anomalostoma alloneura*, Brauer), already known from New Zealand. According to the *case*, *Philanisus* should probably form an anomalous genus of *Leptoceridæ*. Full details, with figures, will shortly appear in the Journal of the Linnean Society.

The *Helicopsyche*, so far as can be judged, appears to be congeneric with the forms that have been bred in Europe and in North and South America. There are cases with larvæ and pupæ, and two ♀ pupæ emerged from their cases, but not transformed into perfect insects.—R. McLACHLAN, Lewisham, London: *3rd June*, 1882.

Reviews.

THE STUDENT'S LIST OF BRITISH COLEOPTERA; with Synoptic Tables of Families and Genera. Compiled by FRANCIS P. PASCOE. Pp. i—viii and 1—120, small 8vo. London: Taylor and Francis, 1882.

The author modestly styles this little book a "compilation." Every Catalogue or List must of necessity be a compilation. But there are compilations and compilations. A clever compiler, with no knowledge whatever of the subject, may produce a very useful work, and sometimes more so than comes from the pen of one full to the brim with special knowledge, and also with opinions of his own. Possibly the best compilations are those made by writers who may be classed between these two extremes. Such a writer we consider Mr. Pascoe, so far as British *Coleoptera* are concerned. The "Student's List" cannot fail to be useful to all British Coleopterists, and its price places it within the reach of all. The ascending scale is adopted, therefore, it commences with the *Coccinellidæ* and ends with *Cicindela*. The old great divisions are retained. The tables for families and genera appear to be generally accurate, and form a novel feature that ought to prove useful to all who have acquired the rudiments of knowledge. Probably errors both of omission and commission may reward the labours of a critical investigator; we fancy that all such discoveries would be gladly acknowledged by the author if communicated to him. The Preface is most distinctly *not* a compilation, but a very vigorous exposition of the author's views on the burning question of priority; he declines to be bound by any absolute rule, but deplores the changes constantly made. As this is the very latest of the somewhat numerous lists of British *Coleoptera*, it might have been useful had the author stated the number of species enumerated, for comparison with previous lists.

Our author is very severe on writers of "unrecognisable" descriptions. These are of two classes. Firstly, those by writers utterly incompetent (from want of knowledge) to perpetrate a description; secondly, those by writers fully competent, so far as knowledge is concerned, but who fail to impart that knowledge to others in an educational sense.

A BIBLIOGRAPHY OF FOSSIL INSECTS. By SAMUEL H. SCUDDER, republished from the Bulletin of Harvard University. Pp. 1—47. Cambridge, Mass., 1882.

A very laborious compilation of between 900 and 1000 references, with short explanatory notes to each; indispensable to all who are engaged in the study of this branch of Palæontology. In a short introduction Mr. Scudder explains that it was originally made for private use; he has done wisely in publishing it.

INSECTS INJURIOUS TO FOREST AND SHADE TREES. By A. S. PACKARD, Jun., M.D. Pp. 1—275. Washington: Government Printing Press, 1881.

Forms Bulletin No. 7 of the United States Entomological Commission. Decidedly one of the most valuable of the many publications on Economic Entomology that have issued from the pens of American entomologists, very copiously illustrated by excellent woodcuts. All the insects known to feed upon the principal trees are enumerated, and very many of the references form concise life-histories of particular species. Under "oak" we find 214 references, under "elm" 43, under "pine" 102, under "birch" only 19, under "beech" only 15, and so on. Of these, of course, only a few can be classed as *really* injurious insects. We commend this work alike to biologists and to foresters, and those having the care of public or private parks; these latter, however, should not suppose that the presence of wood-feeding beetles, &c., is the primary cause of trees being in a bad condition; it is probable the insects are often there *because* the trees are unhealthy.

ENTOMOLOGICAL SOCIETY OF LONDON: *May 3rd*, 1882.—H. T. STAINTON, Esq., F.R.S., &c., President, in the Chair.

Dr. Evald Bergroth, of Helsingfors, was elected a Foreign Member, and Mr. Williams, Zoological Society, Hanover Square, an ordinary Member.

The President, in alluding to the death of Mr. Darwin, one of the original Members of the Society, and to the great loss entomology and natural science generally had sustained, mentioned that Mr. Darwin's connection with the Society occurred during the voyage of the "Beagle," the Society having been founded after his departure and before his return.

The Secretary read a letter from the "Epping Forest and County of Essex Naturalists' Field Club," asking the Members to sign a Memorial in favour of the Forest being retained in its wild condition, to which request the Members who were on the Council had already given adhesion.

Mr. W. C. Boyd exhibited curious varieties of *Fidonia atomaria* and *Anchocelis pistacina.*

Mr. Billups exhibited a ♂ of *Cryptus titillator.*

Mr. Kirby exhibited bred hybrids between *Antheræa Pernyi* and *Roylei.*

Miss Ormerod exhibited galls on the inflorescence of ash, which Mr. Fitch said were produced by a species of *Phytoptus*. In connection with this, Mr. McLachlan called attention to the "sausage gall" on the mid-rib of the leaves of the same tree, occasioned by *Cecidomyia botularia*, and Mr. Fitch alluded to a gall on the fruit, produced by an unknown larva, probably one of the *Curculionidæ.*

Mr. Bridgman communicated a further paper on British *Ichneumonidæ*, supplementary to Mr. Marshall's Catalogue of that family, published by the Society.

Mr. E. Saunders read a continuation of his Synopsis of British Aculeate *Hymenoptera.*

Prof. Westwood sent an extensive memoir on the habits of the *Eurytomidæ*, a family of *Chalcididæ*, but of which one or two species, known as "joint worms," appeared to be non-parasitic, and to be *directly* the cause of the swellings on the stems of various cereals, &c., thus occasioning much damage. One of the most notorious of these was *Eurytoma hordei.* This paper occasioned much discussion, and Mr. Fitch avowed, as his belief, that all the *Eurytomidæ* were purely parasitic.

7th June, 1882.—The President in the Chair.

Dr. Mason exhibited a variety of *Zygæna filipendulæ* from Bewdley Forest, in which the bronze-green ground colour had invaded and obliterated the spots of the anterior-wings and the corresponding colour in the posterior (such a variety was known as *chrysanthemi*, Hübner), and in connection therewith a parallel variety of *Callimorpha dominula.* He also called attention to two species of *Noctuidæ* that had found their way into the British List. The first of these was *Xylophasia Zollikoferi*, the supposed British specimens of which, he said, were only bleached examples of the dark variety of *X. polyodon* (he exhibited an individual of the true *Zollikoferi*) ; the second was *Agrotis helvetina*, of which he exhibited both the true species, and a specimen upon which it was introduced as British ; this latter was very different, and, in his opinion, was a bleached variety of *Noctua augur.*

The President stated that so far as his experience went this year, all the larvæ of *Nematus ribesii* (the gooseberry saw-fly), which had been hatched this season, had died when quite young ; currant leaves riddled with small holes were not unfrequent, but he had not yet seen a single leaf that had been stripped by these insects ; last autumn he had noticed a similar mortality amongst the young larvæ of this species, but this season it seemed so general (at any rate in his locality) as to threaten the extinction of the species.

Mr. McLachlan read a List of British *Trichoptera*, brought down to date, with especial reference to the Catalogue of British *Neuroptera*, published by the Society in 1870, noticing such additions and corrections as had occurred or become necessary ; 152 British species were now known, indicating an addition of twenty per cent. since 1865, when the Monograph of British Caddis-flies appeared.

Mr. Distant read a paper on new species of *Cicadidæ* from Madagascar, in which he alluded to the genus *Platypleura* as occurring nearly all over the world.

Mr. Butler communicated a continuation of the series of papers on the *Lepidoptera* of Chili, collected by Mr. Edmonds, and especially concerning the *Geometridæ.* In connection with some remarks made by the author, as to the difficulty of determining the species noticed by Blanchard, in Gay's "Historia Fisica," Mr. McLachlan expressed his belief that most of the types of species indicated in that work still existed in the Natural History Museum of Paris, and had been overlooked.

THE NATURAL HISTORY OF *RIVULA SERICEALIS.*

BY WILLIAM BUCKLER.

Herein I have to give the history of this species from the egg, and to show how, after the first failure to solve the problem of its food-plant, a second trial ultimately proved successful, and for this I have to acknowledge my indebtedness to Mr. W. R. Jeffrey, for his kindness in enabling me to work it out most thoroughly, of which indeed the full-grown larva and pupa were evidently known to Guénée, but the food plant had not been observed; probably, the larva had been captured after ceasing to feed, and so gave no clue to its food; but we now know for certain the food of its own choice.

The first attempt was made in 1878 from eggs which Mr. Jeffrey induced a captured female moth to lay upon leaves of various low plants, from 12th to 14th of July, and in the share he kindly sent to me I found two eggs on a bramble leaf, four on *Stachys sylvatica*, one on *Solidago virgaurea*, and one on *Fragaria vesca*: they all hatched on the night of the 20th, and the young larvæ were provided at once with leaves of all the above-named plants, besides others, and next day, on seeing none were eaten, other kinds of leaves were given in turn, but the tiny creatures refused every kind of nourishment offered them, and died of starvation, and those with Mr. Jeffrey shared the same fate.

In 1881 Mr. Jeffrey was able to obtain another batch of eggs from *sericealis*, and he again gratified me with part of them on the 24th of July, laid on *Lotus major*, a plant he had observed to be plentiful where the parent moth was captured, though she laid one cluster of eggs without attachment to any plant; in the evening of the 29th, I found a single larva hatched, and twenty-four more next day, when all were put on the *Lotus*, and some other different leaves were tried both by Mr. Jeffrey and myself, with increasing anxiety at finding nothing eaten, and the larvæ, one at a time, were beginning to die off in evening of 31st, when the last thing I happened to put with them was a piece of the leaf of *Phalaris arundinacea*; next morning I was greatly rejoiced to see this bit of coarse grass, when held against the light, showing a number of transparent lines of varying lengths, and the fact was immediately communicated to Mr. Jeffrey, and afforded him a clue to the proper food-plant, as he confidently assured me no *Phalaris* grew where the parent moth was taken, and therefore could only be a substitute food; in this belief, he accordingly took pains to clear up the point by again visiting the locality, while my eleven surviving larvæ were growing, and presently moulting from 8th to 12th August.

Meanwhile, Mr. Jeffrey had captured one or two more female moths, and confined them with three or four species of grass from their locality, and he found *Brachypodium sylvaticum* to be the one most favoured, of which he kindly gave me abundant evidence on the 9th of August with a blade of this grass on which were laid, in the most natural manner, about seventy eggs, singly, and side by side in scattered groups; to this grass the larvæ of the first brood took readily and left the *Phalaris*, their second moult occurring on 16th to 17th, and third moult 25th to 27th, when apparently they fed no more before they were laid up to hibernate; the later brood were, of course, fed throughout on the *Brachypodium* and throve well, moulting also three times, the second moult happening from 16th to 19th September, the third moult from the 26th to 4th of October, and on the 5th all were hibernating.

On 21st of February, 1882, the air became suddenly warm, and many of the larvæ awoke from their long sleep, and for several days hung suspended by short threads; they seemed very weak and unable to feed, though their grass was beginning to put forth tender shoots, yet they soon relapsed into a torpid state when the weather became colder during the month of March, and many then died.

On the 1st of April, with milder weather, I observed one individual larva had, by its bright colours, apparently moulted, though I had no other evidence to judge from, as it was feeding openly on the potted grass quite unprotected; its next moult took place in captivity at midnight of the 19th, it recommenced feeding in course of next day, and continued till the 29th, when it was laid up for what proved to be its last moult, which occurred late at night on 6th of May, and from that date it fed on till the 15th, when it was again laid up, but this time for the pupal change, which occurred on the night of the 20th: in like manner I watched the changes of three others, the last one becoming a pupa on 8th of June.

The perfect insects were bred on the mornings of June 6th, 16th, 18th, and 27th, those on the second and last date were females; on comparing notes with Mr. Jeffrey for this account, I found his first moth was bred on the same day at about the same hour as mine, and that a large proportion of his larvæ had been reared on *Brachypodium pinnatum*.

The egg of *sericealis* is circular in outline, not quite flat, but just a little rounded at the circumferent margin, very numerously ribbed and reticulated, of a light greenish-drab tint, semi-transparent, and rather glistening; a few hours before hatching the top of the egg becomes slightly convex, like a bun, and shows through the shell three or four dusky brown specks.

The newly-hatched larva is quite hairy, and, on examination, its head is seen to be whity-brown, with dark mouth and ocelli, and a dark grey internal dorsal vessel can be but indistinctly discerned through the skin of the body, as it is clothed with long white hairs, and amongst them are sub-dorsal hairs of a dusky greyish colour; when a week old the back becomes tinged with very bright green, and the belly appears limpid and colourless; up to this time it feeds on the cuticle of the grass.

After the first moult it eats out a little notch from the edge quite through one side of a leaf; the head now is greenish speckled with dark red, the body is of a watery green, showing the internal vessel deeply tinged with dark purplish-red, so that the back appears of this colour, but with an interruption on the twelfth segment, the wart-like tubercles are glossy, and furnished with long single blackish hairs.

After the second moult, it feeds in the same manner as before, the dark purplish-red back shows an extremely fine double dorsal line and whitish sub-dorsal lines, the pale greenish head has minute dusky specks, and each speck emits a black hair, and each tubercle of the body also is similarly furnished.

After the third moult the larva is of just the same colours, and with all details of the previous stage, it now ceases to feed. and, after spinning a little silk as a foothold, becomes torpid until spring of the following year.

Having hibernated, and got safely over its subsequent fourth moult, its light green colour is very much brighter, the dorsal line is now darker *green*, and the sub-dorsal is creamy-white; it still attacks the edge of a leaf by first eating out a notch as far as the midrib, and thence eats away either upward or downward, taking out long portions, and always from the upper surface, until, in course of a week, its growth becomes more perceptible, as it attains a length of from 5 to 6 mm.

After the fifth moult its appearance is unchanged beyond the increase of growth, as it soon extends to 7 or 8 mm. in length; its ravages on the grass are rather conspicuous, as it goes from one leaf to another, yet is careful not to attack the extreme point or the midrib, but after the 6th, or last moult, it feeds differently, beginning at the top, head upward, and eating downward through the midrib from one edge to the other in rather an oblique direction across the full breadth of the leaf; sometimes two or three leaves are thus eaten, more or less, but when its appetite is nearly satisfied, it eats only about three parts across the truncated top edge, so as to leave a portion uncut on one side, generally about half an inch long; but previous to this the larva has reached its full growth, the length ranging from 15 to 17 mm., according to sex, as the largest proved to be female; the form is cylindrical, and of moderate stoutness, the head rounded, and the three hinder segments slightly tapered, the anal legs extended backward; the greenish-drab coloured head with dusky dots and hairs, as before, the bright green of the body is deepest on the back as far down as the trachea, which shows faintly through the skin as a paler thread, the belly is of a rather lighter tint of the same green, the sub-dorsal stripes are white, and commence on the second segment, continuing of the same width throughout, though drawing nearer each other as they approach the thirteenth, the outer edge of these is straight, but the inner edge is concave on every segment, so that the green ground of the back appears in a series of broad ovals, with a darker green dorsal line running through them; the segmental folds greenish-yellow; the round spiracles are flesh-colour finely edged with blackish; the warty green glossy tubercles have each on the summit a fine dusky dot bearing a longish rough hair, which when highly magnified proves to be barbed; all the legs green, the ventral and anal fringed with fine blackish hooks; the skin of the body is soft and rather velvety.

As soon as it has done eating at the partly truncated top edge of the leaf, as before mentioned, it remains quiet at that place for some hours, for it is *there* it ultimately pupates after arresting the growth of the leaf, and there, a little below the cut edge, it spins a few silk threads which draw the sides of the leaf a little towards each other and cause an oval-shaped hollow in part lined with silk, wherein the larva lies with either its head near the top edge or else the tail is there, as examples of both postures occur, and one or two threads are passed loosely from side to side over the back of the larva, forming a stay or cincture to secure all in position, and a few more over the hinder segments as further security, the uncut portion of the top edge of leaf is drawn down obliquely over the top of the hollow which shelters the occupant and hides a part of it from view, although it is all on the upper surface of the leaf, but the colour of the larva assimilating with that of the grass is no doubt a source of protection, and the same with that of the pupa.

The pupa is about 10½ mm. long with nothing remarkable in its form, the wing-covers well developed with their nervures in strong relief, the abdominal segments are smooth and very lightly defined, the anal tip is furnished with several minute curly-topped spiny bristles, which are thrust into the silk and held fast; its colour is green, having beyond the thorax the two white sub-dorsal stripes which marked the larva, these gradually fade away as it matures, and the wing-covers turn very pale, then afterwards quite dingy, and at about 9 o'clock the next morning the perfect insect is disclosed.

Emsworth: *July* 12*th*, 1882.

A LIFE HISTORY OF *PAPILIO PÆON*, ROGER.

BY J. J. WALKER, R.N.

It had, for some time, been a matter of surprise to me, that among the butterflies observed in the vicinity of Callao, the genus *Papilio* was not represented: and it was, therefore, with no small satisfaction that, on January 13th, I captured a somewhat worn example of a grand black and yellow "swallow-tail," *Papilio Pæon*, closely related to, but apparently quite distinct from, the noble *Papilio Thoas*, L., which I had met with not rarely at Panamá.

During the next few days, I searched assiduously for the insect, and succeeded in finding its head quarters, about three miles from Callao. It was, however, by no means common, and the few specimens caught were invariably in poor condition. At last, one very warm afternoon, I noticed a worn ♀ hovering over a double row of parsnip-plants, in a small patch of cultivated ground, evidently depositing eggs. I at once got up from the bank on which I was lounging, and examined the plants: before long, I came upon a little caterpillar, which presented such a wonderfully close resemblance to a piece of fresh bird's-dung, that I at first hesitated about taking it up. It betrayed itself, however, as a *Papilio* larva, by protruding a forked tentacle from the 2nd segment: so I continued the search, and soon had forty of these little fellows in my larva-box.

The internal arrangements of a man-of-war do not afford any very great facilities for larva-rearing, and I was at first a little puzzled how to dispose of my captures. By covering a good-sized fruit-basket with leno, and hanging it up to a beam in my cabin, I made an extempore breeding-cage, in which the larvæ throve as well as could have been desired. The larvæ continued to occur freely on the aforesaid parsnip-plants (the only ones I could find), and at the end of February, I had the pleasure of rearing a noble series of the perfect insect.

The egg was often found on the upper-side of the leaflets of parsnip (*Pastinaca sativa*), but always singly. It bears a curious resemblance, in its shape and irregularly roughened surface, to a minute orange: its diameter being about one thirtieth of an inch, and its colour pale cinnamon-brown.

The newly-hatched larva is about two lines long, nearly black, with a pale V mark on the face, and a light brown saddle-shaped spot on the 8th segment: a large black tubercle on either side of the swollen 3rd segment, and one on either side of segments 4 to 13, gradually decreasing in size to the 12th segment, that on the 13th being nearly as large as the one on the 3rd. These tubercles are covered rather thickly with long black hairs.

On the 8th day, the larva was 7 lines long; the tubercles were still distinct, but the skin was slightly shining, and entirely destitute of hairs: colour brown-black, with a short, lateral stripe on segments 2 to 4; a large lozenge-shaped spot on either side of segments 6 to 8 (the hinder angles meeting on the back), and an irregular cloud on the sides of segments 12 and 13, pale whitish-ochreous: prolegs whitish.

At the penultimate moult, the larva was 10 lines in length: the above markings more distinct, the 4th, 5th, and 12th segments more conspicuously swollen than at any other stage. The skin was then very shining, and the resemblance of the creature to a piece of fresh moist bird's-dung, was most extraordinary.

The full-fed larva is by no means easy to describe, but the following is an attempt:—Length, about two inches. Head small, rather dark shining grey-brown: the segments rapidly increase in size to the 4th and 5th, which are quite half as large again as any of the others. This enlargement is very conspicuous when the larva is at rest, the anterior segments being retracted after the fashion of a *Chœrocampa* larva. The 6th segment is abruptly smaller, and thence to the hinder extremity, the body is almost uniform in size, the 12th segment only being very slightly enlarged. The front edge of the 4th segment is rather raised, and extended forward, bearing a curved transverse row of five small pale-edged tubercles. Colour (in a fully marked specimen), rich umber-brown, marbled with paler, darkest on segments 2 to 4, and 8 to 12. A broad, irregular, lateral, creamy-ochreous stripe, sometimes slightly tinged with pink, meeting in front of segment 2, well-defined on segments 3, 4, and 5, it then expands into a large, irregular, rhomboidal blotch, the hinder angles of which unite on the back of segment 9; thence the stripe is rather ill-defined, gradually getting wider and paler as it nears the hinder extremity. An indistinct, pale, ochreous stripe above the prolegs: spiracles and legs pale brown, under-side and prolegs cool grey. Skin smooth, not at all shining. Tentacula long and slender, orange-yellow: these are protuded when the larva is irritated, and emit a powerful and not disagreeable odour, resembling that produced by the larva of *P. Machaon*. Many larvæ are of an almost uniform pale ochreous-brown or clay-colour, with the markings scarcely visible.

The small larvæ feed quite exposed on the upper-side of the parsnip-leaves: the full-fed ones, however, are fond of lurking among the leaf-stalks, close to the ground. At all ages, it is very quiet and sluggish in its habits, often remaining for hours on the same leaf, and only quitting it when entirely consumed. It does not appear to be eaten by birds, and I have not bred a single ichneumon or other parasite from the considerable number of larvæ which I collected.

The pupa is about 1¼ inch in length, not very stout for one of its genus: the wing-covers scarcely project beyond the general outline. The front of the head is deeply bifurcate, and on the thorax is a very conspicuous projection, pointing forwards and a little upwards, giving to that part a somewhat hooded appearance: there is a pair of deep foveæ on either side of the abdomen, just above the wing-covers, and a double row of small projecting points down the back. Surface rough and opaque: colour light to dark wood-brown, mottled with darker, and, in many specimens, washed with opaque verdigris-green along the sides of the abdomen. It remains in this stage for about twenty days.

H. M. S. "Kingfisher," Caldera, Chile:
9th March, 1882.

DESCRIPTIONS OF THE LARVÆ OF HAWAIIAN *LEPIDOPTERA*.

BY THE REV. T. BLACKBURN, B.A.

The following descriptions of the larvæ of four of the most conspicuous and best known species of Hawaiian *Lepidoptera* may, I hope, be of interest.

VANESSA TAMMEAMEA, Kotz.

Pale green, darker towards the sides, dorsal line slender, dark green, sub-dorsal lines broad, very pale green, spiracular lines broad, yellowish-green, head green, red down the middle, legs red, claspers green; head furnished with numerous green tubercles, each ending in a hair; on each segment, except the last, four long spines (which are yellow at base, then red, then black, then white), from each of which seven smaller white spines branch out. On the last segment are two spines (similar to the rest, but much longer) pointing backward. In the young larva the body is black, except the space between subdorsal and spiracular lines, which is green. Larva feeds on a large-leaved plant, three or four feet high, apparently of the nettle tribe, growing rather plentifully in open places in the woods on the mountains of the Hawaiian Islands.

HOLOCHILA BLACKBURNI, Tuely.

Onisciform; clear bright green, above the head and along the spiracular line slightly flushed with pink; along the back run two lines of pale yellow colour which almost meet on the last segment (where they are ill-defined) and diverge towards the head. The whole larva is obscurely pubescent, more distinctly so along the sides. It feeds upon the seed-pods of *Acacia falcata* (the Koa), and, no doubt, on allied plants in various localities on the Hawaiian Islands. The pupa is pubescent, short and stumpy, attached to a leaf or seed, &c., lengthwise, by a few fine threads.

AGROTIS CREMATA, Butler.

Rather broad and depressed, especially near the head, where the larva appears more or less swollen. Very pale drab colour, the dorsal region of all the segments, except the first and last, occupied by blackish clouds which diminish in size backwards. The dorsal portion of the segments behind the head forms a horny plate, which (with the head) is obscurely testaceous in colour, but is margined with black; spiracles black, legs and claspers of the ground-colour, but tipped with blackish. Feeds on a marine plant on sand-hills on Maui, hiding under the sand by day.

RHODARIA DESPECTA, Butler.

Convex, broad in the middle and much narrowed at the ends; each segment individually also narrowed behind and in front; green, almost unicolorous, save that the dorsal line is darker; a few long hairs on each segment. Feeds in folded leaves of a large convolvulus-like creeper, which grows plentifully on the banks of streams in mountain localities on the Hawaiian Islands.

Honolulu: *3rd June*, 1882.

ON *NYCTEMERA BIFORMIS*, OF MABILLE, AND TWO OTHER FORMS OF *NYCTEMERIDÆ* FROM MADAGASCAR.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

Nyctemera biformis (incorrectly spelt *Nichthemera* by its author) was described by M. Mabille in 1878 (Bull. Soc. Zool. de France) from specimens forwarded to him by Mr. Henley G. Smith.

In 1879 we obtained a specimen agreeing with the description of the female, a white insect with dark grey-brown borders to the wings (scarcely *nigris*, Mab.), and in the following year we added an example answering to that of the male, *i. e.*, front wings smoky-brown, with a paler semi-transparent central patch above; hind-wings white, with the basal area and a broad abdominal border, extending a little beyond the first median branch, smoky-grey or grey-brown, and with a rather broad black external border; below all the wings white, with the external borders and the internal border of the primaries smoky-brown.

Upon comparing these two specimens with one another, and with M. Mabille's description, I saw nothing to prevent their being sexes of one species, beyond the fact that no other species in the *Nyctemeridæ* shows a similar discrepancy of pattern in the sexes; the singularity of this supposed instance, moreover, was indicated by its author in the name which he gave to the species; therefore, until a few weeks back, I allowed them to stand together in the Museum series.

This year, however, we have received a female from the Rev. Deans Cowan, which corresponds with the male previously received; the only difference being that the white area on the secondaries is a little smaller than in that insect; in this respect, however, it agrees still more closely with M. Mabille's description of the male: the female of that description is thus proved to belong to a distinct species. Both forms will fall into Boisduval's genus *Leptosoma* rather than into typical *Nyctemera*.

LEPTOSOMA MABILLEI, *sp. nov.*

Nichthemera (*sic*) *biformis*, ♀, Mabille.

♀. Allied to *L. biformis*, but white: the wings with rather broad greyish-brown external borders, which become gradually narrower towards the posterior angles; primaries with a very slender brown costal margin and a broad grey-brown internal streak from near the base to the posterior or external angle; anus ochreous; pectus ochreous, with a black spot on each side; legs and venter white, the latter spotted with black; primaries below without an internal streak.

Expanse of wings, 51 mm.

Antananarivo, Madagascar.

The two following new species of the genus *Hylemera* have recently been received:

HYLEMERA CANDIDA, *sp. nov.*

♂. Allied to *H. tenuis*; snow-white; primaries on both surfaces with the apical area and external border broadly smoky-brown, its inner edge forming a slightly angular arch; a series of five white spots or dashes close to the inner edge of this border, the first (beyond the cell) placed longitudinally, the three following transversely, the fifth being a decided spot at external angle; a smoky-brown spot at the end of the cell; base of primaries, head and palpi ochreous; antennæ dark brown, rest of body slightly opaline. Expanse of wings, 30 mm.

Ankafana, Betsileo Country (*Cowan*).

This is smaller, narrower, purer in colour, and much more simply ornamented with smoky-brown than its nearest ally.

HYLEMERA NIVEA, *sp. nov.*

♂. Allied to *H. fragilis*; snow-white; primaries on both surfaces with the apical area, a discocellular spot confluent with the latter and the external border broadly greyish-black; a sub-marginal wavy white streak tapering from the external angle to the first or second median branch; base of primaries, head, collar, palpi, and coxæ, bright saffron-yellow; antennæ black; remainder of body dull sordid white; costal border of primaries below tinted with yellow.

Expanse of wings, 28 mm.

Ankafana, Betsileo Country (*Cowan*).

The absence of any oblique black costal dash, the slightly narrower external border, the white sub-marginal streak of the primaries, and the absence of a black discocellular spot on the secondaries, at once distinguish this from *H. fragilis*.

I have not seen females of any of the five Mascarene species.

British Museum:
28th June, 1882.

NOTES ON BRITISH *TORTRICES*.

BY C. G. BARRETT.

(*continued from vol.* xviii, *p.* 186).

Grapholitha cinerana, Haw.—In support of the belief of many entomologists that this form is a species distinct from *nisella*, L. Mr. Hird, of Scoonieburn, Perth, very kindly sent me, last year, a number of larvæ feeding between united leaves of aspen (*Populus tremula*). They were lively, but not very active, plump and of equal thickness, except that the anal segment was small; also somewhat flattened beneath, smooth, and rather shining. Colour very pale yellowish-green, with a dark green irregular dorsal vessel, spots invisible, hairs very delicate, head chestnut-brown, with darker eyes and jaws, dorsal plate faintly tinged with brown, anal plate hardly distinguishable. When full-fed, yellow, with brownish dorsal vessel.

On aspen, feeding between the leaves, which it unites flatly together, and does not roll or fold, but eats away the parenchyma. June. Pupa light brown, between the leaves.

All the perfect insects were certainly typical *cinerana*.

Phtheochroa rugosana.—In July last, I received from Mr. W. H. Fletcher larvæ of this species, found feeding in berries of *Bryonia dioica*, at Worthing, Sussex. They were restless, but not very active, fairly cylindrical, with wrinkled and rather swollen segments, pale yellowish-green, with delicate hairs arising from barely visible spots; head chestnut-brown, edged with blackish behind, dorsal and anal plates green, feet also green. Eating out the pulp and also the hard seeds, and leaving only the skins of the berries, which they fastened together, and sometimes the shells of the seeds. These larvæ spun tough, opaque, whitish cocoons, attached to the covering of the vessel. The pupæ were light brown. A moth emerged June 3rd.

Von Heyden describes the larva, "very thick, slightly glossy, somewhat wrinkled with whitish raised dots, each bearing one short hair, unicolorous green, head somewhat narrower than the neck-plate, which is of a darker green than the rest of the body. In July and August it spun together leaf and flower-bunches, feeding in the green seeds. Pupating in a hollowed-out part of the stem, closed with a leaf. Pupa yellowish-green, tolerably thick." It would seem, therefore, that the pupa, as well as the larva, varies in colour.

Pembroke: 14*th June*, 1882.

FURTHER TROPICAL NOTES.

BY W. B. PRYER, C.M.Z.S.

I note with considerable interest Mr. Champion's remarks, in your February number, on my Tropical notes. General descriptions of a country's Natural History are always interesting, and Mr. Champion might well have given us a more lengthy account of his experiences. With regard to his comparisons with my "notes," I must say that I always have understood that the Western tropics and South America are richer in number of specimens of birds, butterflies, and beetles, than this part of the world.

I should not like to be misunderstood in the meaning I wished to convey in my former letter. In stating that most travellers overloaded their descriptions of every-day tropical scenery with astonishing birds, troops of monkeys, wonderful butterflies, shining beetles, gorgeous flowers, many coloured lizards, glittering snakes, &c., &c.,

all visible at one time and place—I did not say that such scenes did not absolutely exist, but that the rare exception was being described as the rule: I have myself seen a combination of several of these items more than once; but if I had the books here I could pick out half-a-dozen in which such scenes, including the birds down to the "glittering" snakes, are printed as descriptions of what is to be seen almost daily in the tropics.

Mr. Champion speaks of the forests of the Tierra Caliente of Central America being more open than those of the East, as probably accounting for the greater quantity of brightly coloured birds, butterflies, &c., to be seen in them, and this is no doubt correct: in open rides in the forest into which the sun can shine there are here a few *Terias Junonia* or *Lycænidæ* nearly always to be found, mostly common species, however, but it is the true primeval forest that I wrote about. As soon as one enters the high forest here, one might as well expect to find butterflies in Westminster Abbey, the interior of which is the best comparison of what the Bornean primeval forest is like that I can bring before my home-staying readers.

With regard to birds in the true forest, we have here in North Borneo as many *species* of birds and as brightly hued ones as any where in the world probably, the Pittas for instance, than which a more gorgeoosly coloured group of birds does not exist, and of which there are several species round this town, but the number of *specimens* is very small; there is no lack of species of animals too, but to see one is most rare (except monkeys and squirrels, and these generally near plantations).

As an actual experience of the high forest I may give a recent experience. I have just returned from having been a 10 days' journey on business in it. I saw but one butterfly the whole time I was actually in the forest, one of the *Satyridæ* with a pink tinge on the under-side, and the usual rows of rings, it was flitting about in a space a litle more open than usual, owing to a large tree having recently fallen there; of other things I saw a Cullassee monkey (*S. rubicundus*), two Kalawat (Gibbon, *Hylobates*, sp.?) mother and young, an otter, and a tortoise of some 50-lbs. weight, besides a few birds; this is all. As already written I was on business, had I been collecting I would have kept to some old clearings close by, and there got plenty of butterflies and birds amongst the deserted fruit trees.

I notice that Mr. Champion writes that one does *not* find all the gaily coloured birds, insects, &c., at once, still they are there, *and in a residence of a few months* one becomes acquainted with them (the italics are mine), he confesses himself "greatly disappointed with his first impressions," but after a long residence, his opinion has greatly changed, and he can confirm my experiences but in one particular. On the contrary, I think these admissions prove all I have written.

As for the tropical primeval forest, on some minds, and mine I confess is amongst the number, it exercises a strong and never-fading fascination. The enormous columnar tree trunks springing straight up branchless and curveless for 120 or 150 feet, the tightly pressed canopy of leaves overhead like an enormous roof, through which not a ray of the sun finds its way, the enormous buttresses to many of the trees, most of the spaces between two of which are large enough for a fairly big apartment if covered in, the strange creepers varying in size from thread-like stems with leaves not so big as ones nail and frequently variegated, to large species with three or four stems each a foot thick joined by rings, holding large forest trees in their tight embrace and rapidly strangling them, while their own cram of leaves high overhead is mixed with that of its victim, the ground covered with mosses large as English ferns (*Caladium*), some of them variegated in the most extraordinary way, others with leaves three or four feet across, Arums springing up higher than ones head, dwarf palms of the most exquisite beauty and of numberless species, the strange Nepenthes, and an infinity of other curious and beautiful forms of vegetable life, while clinging to the tree trunks are to be seen endless orchids and parasitical ferns, all of tiny forms close to the ground but increasing in size higher up, till the remarkable elk- or stag-horn fern is to be seen high overhead, their strange fretwork leaves dangling down a dozen feet below the plants themselves, one of which if taken down would be nearly a cart load of itself; more than all in impressiveness is the gloom, the solemn silence, and the coolness, all these things give a strange charm to the true forest.

But there is no animal life visible or insect either, besides termites and ants, except quite occasionally.

The tropics are rich in species but poor in specimens, offering no comparison in the latter respect to many large districts in the temperate Zone that I know of, either as to profusion of birds, insects, or reptiles, but the superior attraction to a true lover of Nature and not a mere collector rests with the tropical forest for all that.

In looking at collections made in the tropics, it must not be forgotten that in most parts out here there are some 350 days or thereabouts in the year during which the enthusiastic Naturalist can collect.

Elopuro, Borneo: *14th April,* 1882.

CHARACTERS OF NEW GENERA AND DESCRIPTIONS OF NEW SPECIES OF *GEODEPHAGA* FROM THE HAWAIIAN ISLANDS.

BY THE REV. T. BLACKBURN, B.A.

(*Resumed from p.* 229, *vol.* xvii.)

V.

ANCHOMENIDÆ.

CYCLOTHORAX.

C. Karschi, *sp. nov.*

Convexus, nitidus, ater, marginibus pedibusque obscure rufescentibus, antennis palpisque testaceis; capite mediocri; oculis prominulis; antennis corporis dimidio plane brevioribus; prothorace subquadrato vix transverso, antice haud emarginato, basi utrinque foveolato, trans basin punctato, angulis posticis subrectis; elytris elongato-ovalibus, fortiter striatis, striis (marginem apicemque versus deficientibus) fortiter punctatis, interstitiis convexis, humeris rotundatis. *Long.* 6½ *mm.*

A single specimen occurred to me among loose stones on Mauna Loa, Hawaii, at an elevation of about 6000 feet.

I feel some doubt about the generic position of the subject of the above description. It is clearly a member of the *Anchomenoid* series; and I am unable to detect well-defined structural characters to separate it from *Cyclothorax* (in which genus I therefore place it provisionally); but it will be desirable to point out (*a*) that the slight elevation of the prosternal process between the anterior coxæ (Ent. Mo. Mag., vol. xvi, p. 109) is scarcely to be traced in this insect; (*b*) that superficially it differs considerably in appearance from any *Cyclothorax* yet known to me, inasmuch as it might be compared to one of the most elongate species of that genus, furnished with the thorax of *Pterostichus minor*, Sahlb.

The Berliner entom. Zeitschrift, Bd., xxv, 1881, contains a paper by Dr. F. Karsch on the *Coleoptera* that Dr. O. Finsch collected in 1872 on the Hawaiian Islands and elsewhere. The learned author, probably, had not seen my series of papers on Hawaiian *Carabidæ*, since some of the species he describes as new are evidently identical with some previously described by me. I may observe that Olinda—where most of Dr. Finsch's insects appear to have been taken—is a locality in which I have collected at various seasons of the year, and with the ordinary insects (at least) of which I am fairly well acquainted. I venture the following remarks on Dr. Karsch's species and determinations.

Acupalpus biseriatus, Karsch. This seems to be identical with my *Cyclothorax cordaticollis* (Ent. Mo. Mag., vol. xv, p. 156), though there is a slight discrepancy in respect of size: I having stated it as "Long. 4½—5 mm" (I have since taken a specimen 6 mm.), and Dr. Karsch "5—7 mm;" and also the linear punctuation near the suture is stronger, according to Dr. Karsch, than as characterized in my description. In a recently procured series, however, I observe that it varies somewhat in intensity.

Platynus planus, Karsch, is apparently my *Anchomenus erro* (Ent. Mo. Mag., vol. xv, p. 151). The Doctor's description is, however, puzzling. The "*humeris productis*" of the Latin diagnosis becomes, in the German description, "*die schultern gerundet*;" again, *P. planus* is distinguished from *P. albipes*, Fab., "*durch den hinten stärker verschmälerten Prothorax*," but, further on, it is said of the prothorax, "*hinten plötzlich, doch nicht stark, verschmälert.*" The only difference worth notice between my description of *A. erro* and Dr. K.'s of *P. planus*, consists in my "*prothorax leviter transversus*," while the doctor has "*longior quam latior.*" Careful measurement of a series of specimens of *A. erro* gives the following result: the proportion of the greatest width of thorax to length down central line is as 20 to 19 [this is my usual way of measuring]; greatest width of thorax exactly equals greatest length—which occurs a little on *either side* of the central line.

Colpodes octoocellatus, Karsch, is obviously my *Anchomenus Sharpi* (Ent. Mo. Mag., vol. xv, p. 122), although my description has "*angulis humeralibus rectis*," and Dr. Karsch's "*humeris rotundatis.*" In describing, I compared the insect with its ally, *A. rupicola*, Mihi, in which the sides of the elytra are rounded into a curve continuous with the base (whereas, in *Sharpi*, they are straight, and, speaking roughly, at right angles with the base), but I acknowledge that the actual corners themselves are rounded off.

Anisodactylus cuneatus, Karsch, seems to agree exactly with my *Atrachycnemis Sharpi* (Ent. Mo. Mag., vol. xv, p. 120), as does *Promecoderus fossulatus*, Karsch, with *Disenochus terebratus*, Mihi.

The two species of *Carabidæ* that I have observed most commonly near Olinda are my *Cyclothorax scaritoides* and *montivagus*. These do not appear to be the subjects of any of Dr. K.'s descriptions, but I observe in his list of previously described species taken by Dr. Finsch at Olinda, *Oopterus plicaticollis*, Boisd., and *Olisthopus insularis*, Motsch. Now, it happens that my *C. scaritoides* is so much of the general aspect of *Oopterus*, that I went to the trouble of hunting up *O. plicaticollis* long ago, in the "Voyage au Pôle Sud," and satisfied myself that it differed from it (in which conviction I still remain after careful examination), and that my *C. montivagus* is so closely allied to *O. insularis*, Motsch (which species I have in my own collection from New Zealand), that in describing it I thought it well to point out wherein it differed from the latter. This suggests strongly to me the idea that Dr. Karsch and I have, in this instance, the same two insects in view, and that we have arrived at different conclusions concerning them. A renewed examination of the matter leaves me still quite satisfied with my determination of them as new. My descriptions will be found in Ent. Mo. Mag., vol. xv, pp. 122 and 156.

The fact that I suppose Dr. K. and myself to have referred the same insect to different genera will not appear strange to any one who has worked at Polynesian *Carabidæ*; indeed, a reference to Lacordaire's remarks, in the "Genera des Coléoptères," on the genera concerned, will show that their affinities were subjects of perplexity to that author himself.

Cathedral Close, Honolulu:
3rd June, 1882.

DESCRIPTION OF A SPECIES OF *PSYLLIDÆ* RECENTLY NEW TO GREAT BRITAIN.

BY JOHN SCOTT.

TRIOZA CRITHMI, F. Löw.

Verh. z.-b. Ges. Wien, p. 556 (1880).

Overwintered examples.—♂ black. *Head* black; *crown* about twice as broad between the eyes as the length down the centre, the margin white, a little higher than the disc, on each side of the central channel a short longitudinal whitish line, disc near the base with a somewhat deep fovea, slightly curving in the direction of the eyes. *Face-lobes* perpendicular to the crown, white, stout at the base, clothed with a few fine white hairs. *Eyes* dark purple-brown, posteriorly with a narrow white margin. *Antennæ* black, 1st, 2nd, and 3rd joints fuscous-white, 2nd narrowly blackish at the base, 3rd longest, about 1½ times longer than the 4th.

Pronotum white, with a black puncture near the extremities; *mesonotum* black, dull, anterior portion (dorsulum) with a very fine, longitudinal, brown, central line, central portion with four lines placed one on each side of the centre, and another a little remote from the last, extremities brown, apical or scutellar portion black. *Elytra* transparent, with an extremely faint brownish tinge, marginal nerve brown. palest next the base, apex narrowly rounded, length about 2½ times that of the breadth, greatest breadth across the inner branch of the dorsal fork of the cubitus, radius long, straight from the base to beyond the middle, where it slightly but perceptibly curves towards the costal margin, the distance between the apex of the radius and the upper branch of the adjoining furcation, which joins the marginal nerve just above the apex, about 1½ times as great as the distance between the branches of the furcation measured on the marginal nerve, the distance between the latter and the outer branch of the lower furcation about equal, measured as above; nervules short, brown. *Legs* fuscous-white, or yellow-white; *thighs:* 1st pair with a broad black, longitudinal streak down the upper-side; *claws* blackish.

Abdomen black, genital plate yellow, sparingly clothed with short, pale hairs, anterior margin convex, sides produced into a long tooth or tongue-like piece, reaching to beyond the apex of the processes, the latter dark brown viewed from the side, about three times as high as broad at the base, outer margin convex, inner margin slightly concave.

Summer brood.—♂ orange-yellow. *Crown,* margin and pronotum as in the above. *Legs* yellow. *Abdomen* green or yellow, with the last two or three of the segments sometimes black in the middle of the upper-side. All the other characters as in the overwintered examples. Length, 1¼ line (Paris).

Ova orange-yellow, longish-oval or fusiform, each set on a peduncle about 2½ times its length, disposed irregularly, singly, or in pairs on the upper- or under-side of the leaves of the samphire; as they approach maturity, the base assumes a reddish-orange colour, and they may frequently be observed waving from side to side, or swaying backwards and forwards. When close on hatching, they become entirely of a dull reddish-orange colour, and the peduncle is bent down until it touches the surface of the leaf, where it remains until the young larva has made its exit.

Larva orange-yellow throughout all its stages, somewhat oval, flat, sluggish, with a narrow border of glittering white hairs.

Nymph pale orange-yellow, or with the abdomen green, flat, entire margin with a border of glittering white hairs, longest at the extremities, where they appear pectinate. *Head* broad, anterior margin notched in the middle, extremities rounded, disc with four short, longitudinal channels between the eyes, not reaching to the anterior margin narrowly rounded, almost in a line with the anterior margin of the head. *Legs* pale yellow.

This species was originally taken on *Crithmum maritimum* by Dr. A. Puton, at Roscoff and Morlaix (Finisterre), towards the end of June; and, from Dr. F. Löw's description, made from specimens sent to him by the discoverer, I believe these to have been of a newly-hatched brood. Here it has been taken in all its stages, at Anstey's Cove Rocks, near Torquay, by P. H. Gosse, Esq., F.R.S., who most kindly forwarded me many examples, from which the above description has been made, together with the following vivid note of his successful search:

"Anstey's Cove, in the neighbourhood of Torquay, is divided into two by a projecting promontory. The northern of the two, which is the nearer to Babbicombe, has a fine beach of white limestone pebbles. At the rear, the limestone has fallen from the lofty cliffs in great cubic blocks, as big as a small cottage or a railway carriage, which now lie on the shingle, or on the sloping *débris.* From crevices in these blocks, from beneath their bases, and from the ground between, even from amidst the white pebbles, the Samphire is now shooting up (April, 1882) in dense tufts, from the old gnarled stems of last year, the young shoots already six or eight inches high, and carrying half-a-dozen of the compound succulent leaves, or more.

Peering among the tufts, on the 14th, I espied, on some of the leaves (usually on the back of the lowest leaflet) a minute orange-coloured speck, which, under a pocket lens, appeared to be an ovate shield or scale, convex above, but adherent below by its entire surface to the leaf, each furnished, at its extremities, with a horizontal fringe of close-set parallel straight styles, like the teeth of a comb, of glittering whiteness. These shields are perhaps ·05 or ·06 inch long, judged roughly.*

While I was examining these, wondering whether they might be pupæ of the desired *Trioza* or not, I became aware of a number of other minute entities, scattered about the mid-ribs and the leaflets of the *Crithmum;* so minute as to be only just discernible, when seen edgewise against a dark background. These were oblong egg-like bodies, of orange-yellow hue, elevated each on a slender white pedicel, about thrice its own length: the pedicel standing up stiffly and perpendicularly from the leaf, and carrying at its summit the egg (?) affixed obliquely by its end; reminding me of the ova of the *Hemerobiadæ.*

The shields (pupæ?) are by no means rare: and these pedunculate eggs are even more numerous; but always single and isolated, so far as I observed.

But scarcely had these been noticed, before I caught sight of a little Aphis-like fly, with ample glassy wings, deflexed, and tectiform, yellow fore-parts, and bright green abdomen, crawling on the mid-rib of a leaf. I endeavoured to secure it in a pill-box; but it was wide awake, and the handling of the plant, cautious as I was, alarmed it, and caused it to vanish. Another I succeeded in boxing, with a bit of leaf; but trusting to its quietude, I left the box uncovered, that I might more easily secure the next I saw. The stillness proved treacherous, however; for in a few moments, looking, I found it had flown. But I did succeed in bringing home two examples; which, with examples of the other forms, I despatched, by post, to Mr. Scott, the same evening."—*April 15th,* 1882.

Lee: 1*st May,* 1882.

P.S.—Since writing the foregoing, on the 24th ult., I have observed the exit of a few of the infant larvæ from the egg in its upright position on the peduncle, and I am, therefore, not certain that the mode stated above is a true one, because by my examining the contents of the bottle, some of the leaves may have fallen on others bearing the eggs, and thus have produced the result I there witnessed. It will, therefore, be necessary for further observation to determine which of the two modes is the natural one.—J. S.

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* As I sent away to Mr. Scott, by post, immediately on my arrival at home, all that I had gathered that day, these observations were, of necessity, very hastily made, and contained many mistakes. I afterwards found that the "ovate shields" were not adherent, as I had supposed, but were perfectly mobile, wandering larvæ, with six short legs, crouching close and flat to the leaf, but ready to crawl rapidly away, when disturbed. I found them, too, of various degrees of development; some not appreciably larger that the pedicelled ova, whence they had been doubtless just hatched, and some fully ·1 inch long. From the fact that some of the largest had the abdomen of a rich green hue, and a pair of over-lapping plates developed hindward from each side of the thorax, which I conclude to be the wing-sheaths. I presume these to be pupæ; but they were active and locomotive as the others.—P. H. G.

Distribution of the genus Platypleura: a correction.—In the report of the Proceedings of the last meeting of the Entomological Society of London (*ante* p. 48) I am described as having "alluded to the genus *Platypleura* as occurring nearly all over the world." I certainly did not make this statement, as the genus is absent from the Nearctic, Neotropical and true Australian regions. Its area, however, is still extensive, the tropical parts of Africa and Asia being its head quarters, though in the first it is found as far south as the Cape, and in the second as far north as China. It is also found throughout the Malayan Archipelago. What I ventured to observe in my paper, as read by the Secretary, was this: "The more we see of the Rhynchotal fauna of Madagascar, the greater is the amount of structural specialization apparent, and its distinct character revealed. This is particularly the case with the *Cicadidæ*, and every species of the widely distributed genus *Platypleura* which has yet been received from Madagascar has also proved new to science."—W. L. DISTANT, East Dulwich: *1st July*, 1882.

Eupteryx vittatus, Linn.—In a shady corner of my garden grows a patch of ground-ivy (*Nepeta glechoma*) about two yards square, and on this, at this time, *Eupteryx vittatus* is not uncommon. I have no doubt, seeing the pupa-skins are there, that this is the food-plant of the species, which, although often found in woods and other places among herbage, has not, as far as I can discover, ever been identified with any particular food-plant. It probably feeds on other *Labiatæ*, as do other species of the genus, but, whether or not, its association with this plant is worth noting as an addition to a group of allied species of insects correlated in attachment to related species of plants, whether by their respective evolution or not. —J. W. DOUGLAS, 8, Beaufort Gardens, Lewisham: *8th July*, 1882.

Occurrence of Molanna palpata, McLachl., in Perthshire.—I have just taken a few specimens of the above caddis-fly at Lochan Creag Madaidh on the Glen Lyon hills; the level of the Lochan is about 1750 feet above the sea.—JAMES J. KING, Fortingal, Perthshire: *3rd July*, 1882.

On Scymnus Redtenbacheri, Muls., an additional British species, and some other British Coleoptera.—Among some doubtful beetles from the collection of Mr. Wilkinson, of Scarborough, now in the possession of Mr. Mason, of Burton-on-Trent, I found a specimen of a *Scymnus* that I could not determine. M. Brisout de Barneville has kindly named it for me as *Scymnus Redtenbacheri*, Muls. (*bisignatus*, Boh.), a species new to the British list. Mr. Mason has since found several more specimens under the name of *S. limbatus*, and it is quite possible that Mr. Wilkinson may have distributed the species as *S. limbatus*. *S. Redtenbacheri* is, however, very distinct from the true *S. limbatus*; in fact, it belongs to a separate group, *Nephus*, Mulsant, of which we have only one representative, *S. quadrilunatus*, Ill., which has been struck off the British list, although there seem to be one or two specimens extant that rest on good authority.

S. Redtenbacheri is a small insect (⅔ lin.), of long-oval shape, with long grey pubescence, sometimes entirely black, but usually with a longitudinal curved band of a red or yellowish-red colour on each elytron; all the specimens I have seen possess this band; the legs are entirely of a pale yellow colour.

I have only a single specimen of *Scymnus limbatus* (the only one of our generally received species with which it can be confused) to compare with *S. Redtenbacheri*; this is a type specimen from Mr. Rye's collection, kindly lent me by Mr. Mason: the two species may at once be distinguished by their very different shape, and by the colour of their legs; according to Mulsant, this latter character is not always to be depended upon, but it is most marked in the specimens before me, *S. limbatus* having dark pitchy legs with yellowish tarsi, and the legs of *S. Redtenbacheri* entirely of a light yellow colour; the almost round shape of *S. limbatus*, however, compared with the long-oval shape of *S. Redtenbacheri*, affords a character by which the two species can be easily distinguished.

There are two other species of *Scymnus* which have been put forward for a place in the British list, viz., *S. lividus*, Bold, and *S. arcuatus*, Rossi.

The claim of the former species rests on a single example found on the Northumberland coast by Mr. Bold, which, from the description (Ent. Annual, 1872, p. 91), will probably turn out to be only a variety of one of the known species, which are very variable.

With regard to *S. arcuatus*, a single specimen was brushed out of old ivy near Market Bosworth by Mr. Wollaston, who had previously found it in some numbers in Madeira. It is placed in the European list between *S. Guimeti*, Muls., and *S. impexus*, Muls. It appears to be a very distinct species, "the elytra having in common two horse-shoe shaped whitish-yellow lines, open towards the front, and of which the lower encloses the upper" (Ent. Annual, 1873, 33).

Many of the *Scymni* are so obscure, and apparently vary so much, if we may judge from Mulsant's long descriptions (Coléoptères de France, Scymnierid. pp. 210—266), that it is quite possible we may have several more of the described European species in Britain.

While mentioning Mr. Bold's *S. lividus*, it may perhaps not be out of place to ask if any Coleopterist knows what has become of Mr. Bold's collection. *Anchomenus quadripunctatus*, De G., and *Tachys quadrisignatus*, Duft., rest, as British, on single specimens taken by Mr. Bold very many years ago. There is no reason why a species should not be admitted on a single specimen; but if, after the lapse of a large number of years, no further specimen has been found, it is but reasonable to conclude that in some way or other the species may have been imported, or that some mistake may have been made. With regard to *Tachys quadrisignatus*, it appears to be quite probable that, after all, Mr. Bold's insect may be a light variety of the common *T. bistriatus*, especially as the former insect, according to Du Val, is very variable.--W. W. Fowler, Lincoln: *July 7th*, 1882.

Polystichus vittatus and other Coleoptera near Hastings.—I have pleasure in announcing that I have taken a single example of the former at Pett beach, a locality certainly seven miles from Bopeep. Although I worked hard for about two hours, I failed to get more. My brother, Mr. H. F. Collett, obtained for me *Trox sabulosus* by turning up the soil under a dead rabbit, in Guestling Wood. I am just now taking *Athous difformis* plentifully of an evening under my dining room window. One evening, between 8.30 and 9.30, I got as many as 14!—E. P. Collett, St. Leonards-on-Sea: *July 18th*, 1882.

Note on Oodemas ænescens, Boh.—I observe that, according to Dr. Karsch, *Oodemas ænescens*, Boh. (*Cossonidæ*) occurred to Dr. Finsch at Olinda. Is it possible that "Olinda" is here a misprint for "Honolulu," whence Boheman states that he procured the species? I have taken several species of *Oodemas* at Olinda (*vide* Annales de la Société Ent. de Belg., 6th July, 1878, and Ent. Mo. Mag., vol. xvii, p. 199), but not *ænescens*. If it be really a fact that Dr. Finsch took on Maui the veritable species obtained by Boheman near Honolulu, the certainty that such was the case would possess the deepest interest for me, as my experience goes to show that no species of the genus is common to Oahu and the southern islands of the group.—T. Blackburn, Cathedral Close, Honolulu: *3rd June*, 1882.

Dipterous larvæ in the human subject.—In compliance with the request of your correspondent, Mr. William E. A. Axon, in the July number of the Magazine, p. 45, I beg to refer him to the following sources of information on the subject in which he is interested: the Medical Press and Circular for March 15th, 1882, p. 238; the number of the same for April 5th, 1882, p. 304; ditto, April 12th, pp. 314 and 325; ditto, April 26th, p. 368.—J. A. Osborne, M.D., Milford, Letterkenny: *1st July*, 1882.

A day's larva-collecting in the New Forest.—Whilst on a visit to Lyndhurst at the end of last month, I had the opportunity, in company with my friend Mr. Freeman, of Plymouth, of having a day's larva-collecting in the vicinity. It was evident, from the denuded state of the trees, that larvæ were abundant, and such proved to be the case.

Oak produced a number of miscellaneous larvæ, the most noteworthy being *Liparis monacha*, *Nyssia hispidaria*, and *Cymatophora ridens*, all commonly; the lichen-covered branches, a few *Lithosia quadra*; beech, the young larvæ of *Demas coryli*; and the stunted sloe bushes, *Thecla betulæ* and *Aleucis pictaria*.

The most interesting larva, however, which we beat out was dislodged from a large oak in the open forest. The larva resembled, in a marvellous degree, a piece of detached lichen, and we were both at first glance much puzzled as to the species. On close examination we were of opinion that it was the larva of *Catocala promissa*, and Mr. Buckler, to whom we sent it, recognised it as one of the varieties of that species figured by Hübner.

In the afternoon we entered one of the enclosures for *Limenitis Sibylla* and *Argynnis Paphia*. After a diligent search we found two full-grown larvæ of the former, both resting on the upper-surface of leaves of honeysuckle. The larvæ of *Argynnis Paphia* were by no means scarce, crawling over the dead leaves in open places, in search, no doubt, of their food plant; and, to judge from the way in which the violets were eaten, the larvæ must, at an earlier date, have been indeed abundant. Mr. Freeman found a pupa of this species suspended from a piece of honeysuckle whilst searching for the larvæ of *L. Sibylla*. I may remark that perfect insects were extremely scarce.—A. H. Jones, Shrublands, Eltham: *19th June*, 1882.

Carposina, H-S., referable to the Tortricina.—Whilst recently investigating a peculiar group of the *Conchylidæ*, which is represented by several genera in Australia and New Zealand, I happened to discover that the European genus *Carposina*, *H-S.*, usually placed amongst the *Gelechidæ*, is truly referable to this same group. That it does not belong to the *Gelechidæ* is sufficiently proved by the separation of veins 7 and 8 of the fore-wings, which in the *Gelechidæ* and *Œcophoridæ* are invariably stalked; the long straight porrected palpi and peculiar venation of the hind-wings also remove it from those families.

The group of the *Conchylidæ* in question is represented in Australia and New Zealand by the genera *Paramorpha*, *Heterocrossa*, *Bondia*, *Oistophora*, and *Coscinoptycha*. All these agree in the following characters, viz.:—the fore-wings have 12 separate veins; the hind-wings have only 6 veins, of which 3 and 4 risé from a point or short stalk, 5 from upper angle of cell, 6 free; the fore-wings are unusually elongate and narrow, always with tufts of raised scales; the hind-wings are unusually pointed, and the cilia often long. *Carposina* exactly accords with these characters, except that veins 3 and 4 of the hind-wings appear to be separate, which is, indeed, the only point of generic separation from the genera mentioned. The long porrected palpi (differing somewhat in the sexes, as also in others of the genera) and the rather peculiar costal strigulæ are additional points of resemblance, which make the relationship unmistakeable. In superficial colouring and marking the species very closely resemble *Paramorpha* and *Heterocrossa*.

The species of this group are so curious, and at first sight so little suggestive of the usually broad-winged *Tortricina*, that it may be necessary to explain that there is another Australian group, represented by the genera *Heliocosma* and *Hyperxena*, which affords a clear transition to the ordinary type of the *Conchylidæ*.

The relationship of *Carposina* to the Australian fauna is so interesting that I thought it worth while to point out the mistake made in its location.—E. MEYRICK, Christchurch, New Zealand: *April 20th*, 1882.

On some Hymenoptera of the sandy districts of Hungary.—In the description of the insect-fauna of the spring I mentioned that the air was but little animated, but now (summer) the case is altered. Buzzings, chirpings, creakings—the mingled hum of the swarms of insects all around—are fit to put an entomologist, especially a Hymenopterist, into a state of ecstasy. He should have a hundred hands not to miss anything of value. The heat is indeed excessive, on the colder spots 40° Réaum., or more; the sand burns the hand laid on it to such a degree that it is involuntarily withdrawn; there is no shade, not the smallest cloud on the deep blue sky, and yet the condition is not intolerable. On the contrary, one breathes free and easy, for although the air is very hot it is very dry; the pores of the skin are fully active, and by the rapid evaporation of perspiration the skin is always cool; and I can truly say that to me the excursion to these steppes did not differ from a stay at a bathing place, for I left the place, after six or eight weeks, mentally and bodily invigorated and refreshed.

Scarcely have we put a foot on the sand when we are surrounded by *Bembex olivacea*, F. This grand white species of *Sphegidæ* follows us everywhere in our walks. It flies round us, its circuit becoming always smaller, and finally it settles on our coat. Its tone is a monotonous plaint, just like that of *Eristalis tenax*. As we proceed onwards the *Bembex* circles round us more and more, flying about like white snow-flakes. Soon they settle on our sleeves, shoulders, and back; and yet one cannot capture them, for they parry every motion of our net aimed at them. They are also very wary when on their favourite flowers—*Euphorbia Gerardiana*, *Centaurea arenaria*, *Eryngium campestre*, and *Marrubium peregrinum*.

They are most easily caught in the vicinity of their nests. If one comes to a place quite destitute of vegetation, where the yellowish-white ground covered with loose sand has in it a hundred or more holes side by side, there is the colony of *Bembex*. They place themselves at the mouth of the holes, and with an invisible yet fabulously rapid motion of the feet throw the sand backwards, so that it appears as if blown by bellows, and it falls down in the form of a streak about a span wide. Their prey is always a Dipteron. One has here nothing more to do than to scatter the sand with his feet, so that the holes are covered, then the home-comers cannot easily get to their nest, and betake themselves to digging. More continue to come home, and soon a whole swarm like snow-flakes flies hither and thither. Now I seize the net, strike rapidly about ten times, swinging it backwards and forwards close to the surface of the ground. By such means the capture does not fail, and it is also announced by the plaintive tones in the net.

Other species occur, but they cannot be taken in this manner. Here *Stizomorphus tridens*, F., makes its nest, and among them, here and there, the deceptively similar *Larra hungarica*, Fried.: they can only be captured when sedentary on the ground. Both species always prey on *Homoptera* and have an entirely similar mode of living. *Stizomorphus tridens* occurs in greater number, *Larra hungarica* only sparely. We stir not hence being in expectation of catching a splendid Chrysid. We look with watchful eyes on the sand and are happy when we see a dark-looking fly approach with slow flight. It alighted on the hole of a *Bembex* and quickly glided in; it soon returned and sat for some seconds at the mouth of the hole until it was expelled by a returning *Bembex;* then it arose with a heavy flight about a metre high and settled two or three paces off on the sand. We cautiously approach it with the net but it flew farther away; fortunately it cared not for further flight but remained still near at hand; finally we got near enough and were able to throw the net over it. As soon as it felt our fingers it rolled itself up and feigned death. Now we were able to give a glance at it:—it is the ♀ of the splendid Chrysid *Parnopes carneus*, Rossi, which is parasitic on *Bembex*. Mostly only the ♀ is obtained; the ♂ (which has more abdominal segments) is found earlier on the flowers of *Centaurea arenaria* and thistles, but is always very scarce. Once, at the end of August, I found a ♂ in a *Bembex* nest engaged in pairing.—PROF. KARL SAJÓ, in Entomol. Nachrichten: *January 1st*, 1882.

Reviews.

MATABELE LAND AND THE VICTORIA FALLS: a Naturalist's Wanderings in the Interior of South Africa. From the letters and journals of the late FRANK OATES, F.R.G.S. Edited by C. G. OATES, B.A. London, 1881.

It is only of late years that books of travel have contained more than an occasional passing reference to Natural History, or at least to Entomology; but at the present day, it is not often we take up one from which some useful information respecting insects may not be derived, while many, like the work before us, will always retain a permanent scientific value.

Frank Oates, whose last travels are recorded in the present work, when a young Entomologist was settled at Leeds, he afterwards became a student at Oxford, where he showed a great taste for out-door exercise and Natural History. After several premonitory symptoms, his health gave way to such an extent as to compel him to renounce his hopes of a successful University career; and on his partial recovery, he undertook his first journey out of Europe to America, where he spent a year, travelling chiefly in Guatemala and California. Soon after his return from America, he set out again for South Africa, with the fixed intention of reaching the Zambesi. During the early part of his journey, he was accompanied by a brother; but afterwards he travelled alone, or with such European travellers as he chanced to encounter. Unhappily he was detained in the country two years, by the stolid opposition of the natives, before he was permited to visit the Falls, of which, however, he gives no account, though he took some striking sketches. He saw the falls to great advantage; but having been obliged to visit them during an unhealthy part of the year, he was attacked by fever shortly afterwards, and died at a few days' journey on his homeward route.

The account of his journey is compiled by one of his brothers from his notes and journals. He made extensive collections and sketches, and the book is illustrated by numerous coloured plates and woodcuts of scenery, and natural history; and the appendix occupies a third of the volume, including Ethnology by Dr. Rolleston, Ornithology by R. B. Sharpe, Esq., Herpetology by Dr. Günther, Entomology by Prof. Westwood, Botany by Prof. Oliver, and a list of Mahalaha Words and Phrases from F. Oates' note books. The section of Entomology, which is what chiefly concerns us here, consists of a complete list of the butterflies taken (72 species), an account of the more important moths, and general notes of the insects of other orders, with notices and figures of three new beetles, and the Tsetze Fly. This appendix includes 65 pages of text, three beautifully executed coloured plates, and one plain plate, representing details of external anatomy. The body of the work likewise contains occasional references to Entomology; thus the plate opposite p. 143 shows on one side a native oven, formed of a termite-hill, the lower portion of which is hollowed out, and filled with wood, which is set on fire, and when consumed, renders the receptacle an admirable oven, retaining its heat for a great length, of time. On p. 135 a woodcut is given of a termite-hill which was no less than 18 feet high.

THE STUDENT'S LIST OF BRITISH COLEOPTERA. Mr. Pascoe sends us the following: "In your review of my little work, "The Student's List of British Coleoptera" (p. 46 *ante*), you say "our author is very severe on writers of 'unrecognisable' descriptions;" but the reasons given in a note, which related exclusively to the older writers, are that they were "made without a knowledge of allied species," and that "the most important points of structure remain unnoticed." I did not complain of "writers utterly incompetent," nor of others "fully competent" who failed to impart their knowledge to others. I did, however, complain of descriptions "*pour prendre date*," the writers, I believe, confiding to the protection of an *absolute* rule of priority whereby the most diagnostic notice serves the purpose."

A PROBABLE CLUE TO THE HABITS OF *CHAULIODUS INSECURELLUS*, STAINTON.

BY H. T. STAINTON, F.R.S.

I do not know whether there have been any recent captures of this insect, but so far as I am aware it has never yet been bred.

The possible habits of the larva have long occupied my attention, but it is only within the last twelve months that I have attained a fresh idea as to its mode of feeding.

I may premise that the earliest known captures of *Chauliodus insecurellus* were erroneously recorded in the Zoologist for 1848, p. 2035, under the name of *Chauliodus Illigerellus* (a very different and much larger insect); the two specimens which formed the subject of that notice "were taken by Mrs. Stainton and her sister, on the downs near Stoats' Nest, on the 31st July, 1847," and I then added, "I am unable, not having caught them myself, to speak with certainty as to what plant they were beaten out of, but most probably out of the junipers, as we thrashed the junipers most assiduously for *Cochylis rutilana*, of which I was fortunate enough to obtain five. Mr. W. Shepherd also took a specimen of this insect off the junipers at the same place, the following week."

In preparing my first Catalogue of British Tineidæ and Pterophoridæ (published in 1849), I realized that these little specimens of a *Chauliodus* taken at Stoats' Nest were not the veritable *Illigerellus*, and I proposed for them the name of *insecurella* (in this Catalogue they stand in the genus *Elachista* under section A). I then mentioned that I had again met with it on the downs at Stoats' Nest, August 16th, 1848, but was still uncertain as to the plant that it frequented.

I have no record of the number of specimens I caught on that occasion, but two of those captures and the two specimens of July 31st, 1847, are the sole representatives of the species now existing in my collection. During a period of 34 years I have made no fresh captures of the insect.

The description which I gave in the Zoologist for 1848 (not having then fine specimens before me) is of little use, and unfortunately I am hardly better satisfied with the description in the Insecta Britannica volume, for the points of distinction on which I am now disposed to lay the most stress are not there alluded to.

Of late years several new species of the genus *Chauliodus* have been described by the German and French Entomologists, and in

Staudinger-Wocke's Catalogue, Herrich-Schäffer's *Ch. dentosellus*, fig. 967, V. p. 208 is given as a synonym of my *insecurellus*, an opinion I am not prepared at present to endorse.

One, however, of the recent novelties, *Chauliodus iniquellus*, described by Wocke in the Stettin. ent. Zeitung, 1867, p. 209, from specimens found near Breslau on the flowers of *Athamanta oreoselinum*, in the middle of July, seems to come so near to *insecurellus* that I thought it possible they might prove identical, I am, however, now of opinion that this is not the case.

In August last year, Monsieur A. Constant, who is now settled at Golfe Juan (not far from Cannes), sent me a box of Micro-Lepidoptera for determination, and amongst the species sent was *Chauliodus iniquellus*, which he said he found in the larva state in September feeding on the seeds of *Peucedanum officinale* and *cervaria*, but remaining in the pupa state all through the winter, spring, and summer, the moth not appearing till the following month of August.

In my reply I mentioned this and *Ch. strictellus* as species in which I was much interested, and on the 27th October, Monsieur Constant having just returned from an excursion in the Estérel mountains between Cannes and St. Raphael, very kindly sent me some pupæ of both these species, remarking that I might expect the *strictellus* to emerge very soon (which they did on the 6th and 8th November), but that for the *iniquellus* I must have patience, as the moths would scarcely appear before August, 1882. He accounted for this extreme difference of habit owing to the larva of *iniquellus* feeding only on the seeds of *Peucedanum*, late-flowering plants which do not blossom till near the end of summer, whereas *strictellus* is not restricted solely to *Peucedanum* but feeds also on other umbelliferæ (such as *Ferula*), which are in full vegetation at the end of October, so that the perfect insects have no difficulty in finding opportunities of depositing their eggs.

These pupæ of *iniquellus* I kept indoors in a cool place throughout the winter and on the 7th of July, when starting for a tour in Scotland I took them with me; true to their appointed time the first appeared July 19th, two more July 29th, two others August 6th, and two others August 12th after my return home, I have, therefore, now before me a series of *iniquellus*, of my own setting, which I can better compare with my specimens of *insecurellus*, and I come to the conclusion that the two species are undoubtedly distinct.

It is notorious to any one who has devoted a little attention to this genus that some of the species have the anterior wings more or less falcate, such as *Illigerellus* (to which Haworth gave the name of *falciformis*) and *chærophyllellus*, whereas in others, as *pontificellus*, *ochreomaculelellus*, &c., the hind margin is more or less rounded. Now *iniquellus* belongs to the latter, *insecurellus* rather to the former section; at any rate, the hind margin of the cilia from the apex appears straight and not at all rounded at the apex as in *iniquellus*.

In *insecurellus* the basal portion of the anterior wings seems decidedly paler than in *iniquellus* and contains three black dots (not mentioned in my previous descriptions) placed thus: one on the subcostal nervure, one beneath it on the fold, and the third and smallest one placed rather more posteriorly nearly midway between the other two, I believe I can trace these dots more or less distinctly in all my specimens of *insecurellus*, whereas in the bred specimens of *iniquellus* I see no symptoms of them.

Herrich-Schäffer's figure of *Ch. dentosellus* shows no indication of these three black dots; moreover, he says it occurs near Vienna in May and June, a period of appearance which would ill accord with *insecurellus*, so that on these two accounts I would prefer for the present to consider *dentosellus* as distinct from *insecurellus*.

The larva of *iniquellus* being a seed-feeder must be much less exposed to observation than the leaf-feeding larvæ of this genus. In localities where *Heracleum sphondylium* grows commonly by the road sides, and *Chauliodus chærophyllellus* occurs, the presence of the larvæ of this species as revealed by the browned leaves of the *Heracleum* becomes quite a feature in the landscape.

As the larva of *insecurellus* has hitherto escaped observation, I strongly suspect that it must be a seed-feeder, and very probably, as with *iniquellus*, the larvæ which feed up and pupate in autumn do not appear in the perfect state till the end of July and beginning of August.

In Dr. Rössler's last work on the *Lepidoptera* (Die Schuppenflügler) of Wiesbaden he has a notice of *Chauliodus iniquellus*, at p. 318, which is very suggestive. "The imago is not scarce in woods near Mombach, in July, on and around the flowers of *Peucedanum oreoselinum*. If we wish to breed it, all we have to do is to carry home the umbels of ripe seed in October. Afterwards we shall find amongst them on the ground numerous small pupæ without any cocoons. Any traces of the larvæ in the seeds or stems have not been observed."

I must here repeat my best thanks to Monsieur Constant for his most acceptable present of pupæ of *Chauliodus iniquellus*, the new notions thus obtained seem now to have brought us within measureable distance of the discovery of the larva of *Chauliodus insecurellus*.

I shall be very glad to hear from any Entomologist who has made any recent captures of the insect. Its old locality must I fear have long since been extirpated by advancing cultivation, if not by bricks and mortar, but no doubt it occurs on other chalk downs, where shelter for unfortunate Micros is afforded by the growth of juniper, and where *Umbelliferæ* of some sort blossom and go to seed.

Mountsfield, Lewisham, S.E.:
August 14*th*, 1882.

DESCRIPTION OF A NEW SPECIES OF *PENTATOMIDÆ* FROM JAPAN.

BY W. L. DISTANT.

In writing on a small collection of *Rhynchota* from Tokei, Japan (Ann. & Mag. Nat. Hist. [July], 1881, p. 28), I recorded a species of *Pentatomidæ* as *Tropicoris metallifer*, Motsch. ?, remarking that my two Japanese specimens appeared to agree well with the descriptions of Motschulsky and Oschanin (the latter author having renamed and re-described the species), with the exception of the colour of the apex of the scutellum; I have, however, recently received a specimen of *T. metallifer* from the Amur, and find that the Japanese forms constitute a very distinct species, which I here describe.

TROPICORIS JAPONICUS, *n. sp.*

Body above metallic-green, body beneath and legs pale reddish, membrane pale fuscous, with the nervures darker. Head very thickly and coarsely punctate, with the eyes ochraceous. Antennæ, with the 1st and 4th joints, pale reddish; 2nd, 3rd and base of 4th joints fuscous; 3rd joint longest, 1st smallest, 4th a little longer than 2nd (5th wanting). Pronotum coarsely and densely punctate, sub-rugulose at base, lateral angles produced into somewhat broad and flat processes, their apices slightly concave, the apical angles obtusely spinous, the anterior spine longest and most produced, lateral angles distinctly serrate, and, with the margins of posterior angles, pale reddish; two small, irregularly rounded, ochraceous fasciæ near anterior margin. Scutellum thickly and coarsely punctate, and sub-rugulose at base. Corium very thickly and finely punctate. Abdomen above dull reddish. Membrane pale fuscous-hyaline, appearing darker at base, from reflection of abdomen, the nervures darker. Abdomen beneath bright pale reddish, the sternum somewhat ochraceous. Prosternum coarsely punctate, particularly at lateral angles. Legs speckled with fuscous. Stigmata black. Rostrum ochraceous, its apex pitchy and reaching the base of 4th abdominal segment.

Long. 17 mm.; lat. pronot. angl. 11 mm.

Hab. Tokei, Japan.

This species is closely allied to *T. metallifer*, Motsch., but differs by the very different structure of the pronotal angles, the concolorous apex of the scutellum, different colour and structure of the antennæ, &c.

Selston Villas, Derwent Grove, East Dulwich:
August, 1882.

NATURAL HISTORY OF *ENNYCHIA ANGUINALIS.*

BY WILLIAM BUCKLER.

In the belief that no description has been heretofore published of the larva of *E. anguinalis*, I am induced to think the following account of it from the egg may be acceptable, and here I must thankfully acknowledge that it is entirely due to the kind and friendly co-operation of Mr. W. R. Jeffrey in sending me the largest share of a small batch of eggs he was lucky to obtain from the parent moth he had captured, that I am enabled to give this history.

I received the eggs on the 9th of August, 1881; eleven of them were laid on leaves and on a bract of the blossom of *Origanum vulgare*, and four on a leaf of *Mentha arvensis*, singly, and one overlapping another; though they were very flat when first laid, as Mr. Jeffrey informed me, yet I found they had begun to swell and by the next day had filled out considerably, and on the 17th four of them hatched, and another on the 20th, but no more.

The larvæ moulted three times, the first moult occurring when they were eleven days old, the second moult when twenty-five days old, and the third moult at the age of thirty-eight days; from this last moult the period of maturing varied from thirteen to seventeen days; the latest hatched individual was full-fed on 17th of October, just six days behind the others.

At Mr. Jeffrey's suggestion I tried *Thymus serpyllum* at first with two larvæ, and they took to this food very well as long as the supply lasted, the others equally well to *Origanum*, feeding on the cuticle of the leaves during the first three days and thus caused small transparent blotches, and on the fourth day began to eat small holes quite through the substance of either leaf.

About the end of the month I found only four alive, as one of those two that had previously fed on thyme—a food I was unable to provide any longer—had died, having refused the marjoram, although its companion soon took to it, and the others had thriven well on it from the very beginning of their career to the end; eating more and larger pieces from the leaves as they grew bigger, and latterly whole leaves would be consumed, but only those of a medium size, for they seemed not to care for the larger leaves nor the smallest, nor the blossoms.

They very cleverly kept themselves concealed by spinning their light hammocks in such an artful manner as to draw a leaf or two partly round the stem of their location so as to appear like a natural disposition of plant growth; and so fine and thin was the silk spun under the leaves, that though of whitish colour it never showed at all conspicuous, while it served to veil the full depth of the larval colouring; indeed, the whereabouts of a larva could only be guessed, by noticing pieces absent from the neighbouring leaves, as it was very seldom I could detect one while it was stretched out a little beyond its residence in the act of feeding.

When full-fed they wandered restlessly for two or three days, and then one spun itself up in a cocoon attached to the top of its cage and to the leno cover, another spun its cocoon in a piece of hollow stem provided for it, one in the leaves of marjoram, and the fourth I accidentally squeezed, so that it was unable to spin and eventually perished; and I learned from Mr. Jeffrey that a similar untoward mishap had befallen one of his only two larvæ just when he had brought them to maturity.

From the larvæ reared between us, three examples of the moth were bred, the earliest by Mr. Jeffrey on 8th of last June, and two by myself, probably somewhat later, as they had both died before I had observed them.

The egg of *anguinalis* is round and flattened, becoming more and more convex and plump above as the embryo develops; the surface is very finely pitted or reticulated, of a whity-greenish tint and slightly glistening; the day before hatching the darkish head of the embryo shows through the shell.

The newly-hatched larva is of a transparent flesh-colour, slightly tinged with pinkish-grey, with a grey-brown head and neck plate, and on the rest of the body most minute dusky dots and hairs; it becomes pinkish when a week old, and very active.

After the first moult it is semi-transparent tinged with dark purplish-pink, which increases towards the end of this stage, and its hammock is very transparent.

After the second moult the larva is of a deep purplish brown-pink colour, the skin less transparent than before, except the plate on the second segment, which is translucent, glossy and greenish, finely freckled with black, the head similar but with browner freckles on the face; the spots on the body are very distinct, large, black, and glistening, while the purplish-brown skin is dull and opaque; ten days later, when seen in repose it seems short and almost black, though when disturbed and eager to escape it stretches itself out to 8½ mm., and is then seen to be much more slender, and tapered at either end; the colouring of the head and second segment is as before a rather olive-green, but the skin on other parts appears to be a very dark smoky-green, and slightly glistening at the segmental divisions.

In about ten or eleven days after the third moult its full growth is attained, and the length is 18 mm., its stoutness in proportion, tapering from the third segment to the head, also at the two hinder segments; beyond the thoracic each segment is subdivided by a deep wrinkle across the middle of the back and again by one nearer the front and another nearer the end, the two central portions, bearing the trapezoidal large roundish spots, are very plump, a similar spot is on the side, another beneath the spiracle and another is lower and farther behind, near the belly; the colour of the head and second segment is bright olive-green and very shining, the lobes of the head are marked on the crown with black and with fine black freckles on the face, the plate is also finely freckled with black, all the rest of the body has a very dull purple skin relieved by large black and minutely wrinkled spots, especially while the larva lies at rest, but when roused up into activity the purple hue still becomes a little neutralized by the green interior, this change of colour seems to be caused by extreme tenuity of the skin at such times, when it allows the green to show partly through, and to glisten slightly at the divisions and increase the soft lustre of the black spots; when, however, the larva shortens itself and the skin shrinks, it obscures the green beneath, much as the skin of a purple grape obscures the green pulp within; each spot bears a fine hair; the spiracles are small, round and black; the anterior legs green, the ventral and anal legs are translucent and almost colourless.

The cocoon is of whitish silk, which, after a few weeks, turns of a light flesh-colour, its shape is oval, about 11 mm. long, and composed of a coarser outer structure and a more compact and finer texture within.

The empty pupa-skin was found to have nothing remarkable in its form but a rounded knob at the abdominal tip furnished with widely diverging, fine, curly-topped bristles attached to the lining, its length being 7 mm.; in colour darkish brown and rather shining.

Emsworth: *August* 10*th*, 1882.

A CONTRIBUTION TO THE LIFE HISTORY OF *SPERCHEUS EMARGINATUS.*

BY THE REV. W. W. FOWLER, M.A., F.L.S.

About the 16th of last May, Mr. Billups kindly sent me two live specimens of *Spercheus emarginatus* taken at West Ham. I put them into a glass globe of water to watch their habits: the first thing that struck me was the peculiar way in which they walked on the under-side of the surface of the water, exactly like a fly on the under-side of a pane of glass; a thin film of air contained between the abdomen and the projecting sides of the elytra seemed to serve as a kind of float, and support them.

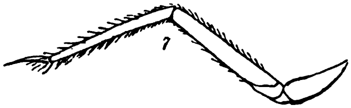
On May 19th, I was very pleased to see that one of the specimens had developed an egg-bag: the bag is formed of a tough whitish membrane, and covers the whole of the abdomen: at first it was contained within the projecting sides of the elytra, but by May 25th, it had swollen beyond them: on May 28th, it was very much swollen, and the shape of the eggs (a long oval) was quite visible; unfortunately, I did not look at the beetle again for two or three days, as I was much occupied, and, therefore, missed the hatching period, but on May 31st, I found that the egg-bag had disappeared, and that a number of larvæ (about 100) were hatched out. I at once noted that, although so entirely different in shape, they walked on the under-side of the surface of the water back downwards, exactly like their parents: occasionally, they would crawl below upon the plants, but did not stay for long, and immediately on letting go their hold of the plant, they rose rapidly to the surface: apparently, it is impossible either for the larvæ or perfect insects to go beneath the surface of the water unless they can manage to cling to some plant and crawl down; on examination of some specimens of the larvæ mounted in glycerine jelly, I found the tracheæ very largely developed, and the quantity of air thus contained within the body would explain the fact; the tracheæ end at the tail, through which the insect apparently mainly breathes: it never, however, assumes a perpendicular position like the larva of the gnat, but always keeps a horizontal one, with all its legs at the surface, and its tail curved upwards to meet the air.

I hoped to follow the insects through further stages, and divided them into three lots, but, by June 5th, all the first lot had died, and, by June 9th, the second lot, all but one or two, had died also; on June 10th, I found out the reason, for I caught them in the act of devouring one another, an operation for which their huge jaws peculiarly fitted them. I then separated the very few remaining out of the three lots, but it was of no use, as the last died on June 12th. The original beetles are now (Aug. 9th) well and thriving, and will, I hope, continue so, as Mr. Billups tells me that a railroad is likely to be run through the locality they came from, and that *Spercheus* is likely again to become in time one of our greatest rarities.

The larva is so peculiar, especially as regards its mouth parts, that I got Mr. Matthews to dissect it, which he has done with his usual skill, and has also furnished me with his drawings, and the chief part of the appended description: so little is known of the larvæ of the various species of *Coleoptera*, in spite of their characters being so important for classification, that the addition of even one or two full descriptions may prove of great use.

The following, then, is a detailed description :—

Head very large, rounded, with short, straight, filiform antennæ, consisting of three almost equal joints (fig. 6). *Body* elongate, rather narrowed anteriorly, considerably widened behind middle, conical towards the extremity, with two prothoracic, segments divided by a very indistinct suture, three metathoracic segments divided by two equally indistinct sutures, and seven abdominal segments, of which the first is considerably the largest. The last segment of the abdomen carries two small knobbed processes, and each joint is furnished with strong setæ.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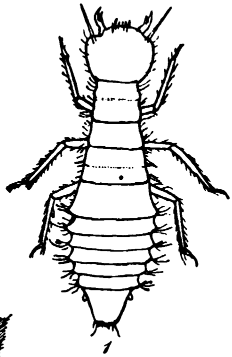
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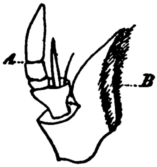

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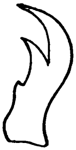
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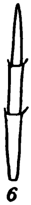
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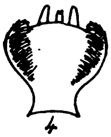
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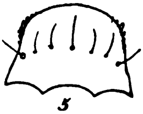
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Legs rather long and slender, with the trochanter of the hind-leg divided transversely in two parts (fig. 7); *tibiæ* narrowed towards apex, widened at the base, with a few long setæ on each side: *tarsi* one-jointed, carrying two claws of unequal length.

The mouth parts are very peculiar (especially the maxillary palpi, which are almost unique in shape), and, therefore, deserve a separate description :—

The *maxillary palpi* (fig. 2A) are four-jointed, and have the basal joint very enlarged, with a hollow cavity on the inner-side covered with a membrane, from which a long point or style proceeds, like another lobe; the second joint is very short, the third double the length of the second, and the fourth as long as the other two together.

The *maxilla* (fig. 2B) is unilobed, sharply pointed, with a flat surface in the middle, fringed with hairs on either side. The mandibles (fig. 3) are very large and slender, each with the apex divided into two very strong and very sharp hooked teeth, the upper being the longest; there is also a blunt tooth about half way between these and the base of the mandible.

The *mentum* (fig. 4) is balloon-shaped, broadly rounded in front, and constricted at base, with a strong fringe of incurved hair on each side within the outer edge:

the apical edge is broadly excised; it seems to bear a considerable resemblance to the so-called mask of the dragon-fly; the *labium* and *ligula* are concealed behind the mentum, and only the points of the labial palpi and ligula are visible.

The *labrum* (fig. 5) is very large, rounded, and convex, with a few small teeth on each side, and a row of fine setæ about half way from the base.

The insect always carries its formidable mandibles wide open, and is evidently carnivorous.

Lincoln: *August* 10*th*, 1882.

NOTES ON THE *NEUROPTERA* OF LANGDALE.

BY J. J. KING.

On August 3rd, 1881, I left London for a holiday at the English lakes, having selected Skelwith Bridge, which is about three miles from Ambleside, as my head quarters.

During the month of my sojourn I found the English lake district to have rather a depressing effect on the spirits of the anxious collector who is eager to be at his work, owing, in a great measure, to the abundant supply of rain, which at times continues without intermission for four days (my experience), and causes the river to rise many feet above its usual level, covering up the bushes and herbage along its banks, so that all collecting along the margins of the river has to be suspended for a few days, until the ground gets into a fit state to walk upon.

In a moderately dry season I should think that the district would turn out well for *Neuroptera*, as there is a very great variety of land surface, &c., but my captures were not very extensive, owing to the wet season.

On the afternoon following my arrival, I went down to Windermere lake to search for *Setodes argentipunctella*, McL., the type specimens of which had been taken by Mr. Hodgkinson, near Windermere lake, but I was unsuccessful in obtaining it near the lake; Mr. McLachlan having shewn me a number of specimens of this species that he had captured in Belgium, during July, along the banks of a small river, I thought I might obtain it if I made a search along the Brathay river, and towards evening I was rewarded with a number of this beautiful little creature, which abounds near Brathay Church.

I only captured some 84 species, excluding the *Perlidæ* and *Ephemeridæ* (which are not worked up yet), most of them being more or less common; but among the *Trichoptera* one novelty fell to my net, namely, a new *Hydroptila*.

Below will be found a list of the species taken.

PSEUDO-NEUROPTERA.

Psocidæ.

Clothilla pulsatoria, L., very common in the house.

Psocus longicornis, Fab., a few were taken along the Brathay river, and also near Rydal water. *Ps. nebulosus*, Ste., common everywhere. *Ps. variegatus*, Fab., rare, near Dungeon Ghyll. *Ps. sexpunctatus*, frequent on the road to Dungeon Ghyll. *Ps. bifasciatus*, Latr., common near Grasmere lake and Brathay river.

Stenopsocus immaculatus, Ste., abundant everywhere.

Cæcilius flavidus, Ste., common all over Langdale. *C. obsoletus*, Ste., rare in Langdale. *C. vittatus*, Dalm., frequent.

Peripsocus phæopterus, Ste., frequent.

Elipsocus Westwoodii, McL., abundant everywhere. *E. hyalinus*, Ste., equally common with the last. *E. flaviceps*, Ste., common.

ODONATA.

Sympetrum striolatum, Charp., common. *S. scoticum*, Don., rare.

Libellula quadrimaculata, L., a few specimens were observed sporting over some pools on Loughrigg Fell.

Cordulegaster annulatus, Latr., not common.

Æschna juncea, L., frequent. *Æ. cyanea*, Müll., with the last species.

Pyrrhosoma minium, Harr., on every pool.

Agrion cyathigerum, Charp., about Grasmere lake and Rydal water.

NEUROPTERA-PLANIPENNIA.

Sialis lutaria, Linn., a few. *S. fuliginosa*, Pict., not common.

Sisyra fuscata, Fab., abundant about Grasmere and Rydal water.

Micromus paganus, L., common everywhere.

Hemerobius micans, Oliv., common. *H. humuli*, L., abundant. *H. marginatus*, Ste., a few specimens along the Brathay river. *H. limbatus*, Wesm., frequent. *H. subnebulosus*, Ste., on trunks of apple trees near Skelwith Bridge.

Chrysopa flava, Scop., common. *Ch. alba*, L., common everywhere.

Coniopteryx tineiformis, Curt., and *C. aleyrodiformis*, Ste., both species were to be had by beating.

Panorpa germanica, L., common.

TRICHOPTERA.

Phryganea varia, Fab., common near Elter water.

Limnophilus marmoratus, Curt., common all over the district. *L. lunatus*, Curt., common everywhere; on the south side of Rydal water it is excessively abundant, each tap of the beating stick dislodging scores of this species: I caught some hundreds of it to see if I could get variety in wing-markings, but did not find a specimen that differed much from the type. *L. centralis*, Curt., also very common. *L. sparsus*, Curt., abundant.

Anabolia nervosa, Curt., not common.

Stenophylax stellatus, Curt., abundant.

Halesus radiatus, Curt., a few were taken on the Brathay river.

Drusus annulatus, Ste., rare.

Sericostoma personatum, Spence, a few specimens occurred.

Goëra pilosa, Fab., at Elter water, but rarely.

Silo pallipes, Fab., common.

Crunœcia irrorata, Curt., three specimens were taken.

Lepidostoma hirtum, Fab., common everywhere.

Leptocerus alboguttatus, Hagen, very common near Skelwith Bridge. *L. cinereus*, Curt., not so common as the next. *L. aterimus*, Ste., abundant. *L. bilineatus*, L., at Elter water. *L. albifrons*, L., among the rushes on Elter water. *L. dissimilis*, Steph., not common.

Mystacides nigra, L., not common. *M. azurea*, L., common. *M. longicornis*, L., also common; a nice yellow variety of this species occurred, in which the dark markings are nearly obliterated.

Triænodes bicolor, Curt., common, by sweeping the reeds on Elter water.

Œcetis lacustris, Pict., common at Elter water. *Œ. testacea*, Curt., with the last. *Œ. furva*, Ramb., rare at Elter water.

Setodes argentipunctella, McL., common along the Brathay river.

Hydropsyche lepida, Pict., a few were taken along the Brathay river. *H. guttata*, Pict., common everywhere.

Philopotamus montanus, Don., rare on the Brathay river.

Wormaldia subnigra, McL., rare in the same locality as the last.

Neureclipsis bimaculata, L., two specimens.

Polycentropus flavomaculatus, Pict., common. *P. Kingi*, McL., rare.

Holocentropus picicornis, Steph., frequent.

Cyrnus trimaculatus, Curt., common everywhere. *C. flavidus*, McL., rare on Elter water.

Tinodes wæneri, L., common on all the streams.

Psychomyia pusilla, Fab., a perfect pest.

Chimarrha marginata, L., a few on stones on the bed of the Brathay river.

Rhyacophila dorsalis, Curt., always turning up when it was not wanted.

Glossosoma vernale, Pict., common.

Agapetus fuscipes, Curt., common.

Ithytrichia lamellaris, Eaton, along the Brathay burn.

Hydroptila, n. sp. I believe that this species was taken among the rushes on Elter water.

Oxyethria costalis, Curt., and *Orthotrichia angustella*, McL., both occurred along the Brathay burn.

207, Sauchiehall Street, Glasgow:
June, 1882.

ON THE SPECIFIC IDENTITY OF *TERIAS HECABE* AND *T. MANDARINA*.

BY H. PRYER, C.M.Z.S.

For the second time I have bred the full black bordered *Terias Hecabe* from eggs laid by the extreme form of *T. Mandarina;* the latter is simply the form under which this species hibernates.

Some five years ago I succeeded in breeding a few specimens, all of which were good typical *Hecabe*, from eggs laid in the early spring by *Mandarina*, but hesitated in publishing the fact until I had confirmed it by further observations.

T. Mandarina only appears about Yokohama in the autumn and after hibernation in the spring, the intervening broods being *Hecabe*.

A decided difference is observable in specimens according to the altitude at which captures are made, the *Mandarina* form appearing much sooner towards autumn in the mountains than on the plains. We may, therefore, conclude that temperature is the cause of the differences in form, size, and coloration of this extremely variable insect. This insect having been described under many names, I propose uniting all under the name of *Terias multifrons*, and in a paper in course of preparation will give a list of its synonyms.

Yokohama: *3rd June*, 1882.

HYMENOPTERA AND *HEMIPTERA* AT DEAL IN JULY AND AUGUST, 1882.

BY EDWARD SAUNDERS, F.L.S.

I have just returned from Deal, where I have been staying for about three weeks, during which time I have done my best to get together as many rarities as possible. The late Mr. F. Smith always regarded Deal as one of the best localities for *Hymenoptera* in this country, and, knowing the many scarce species that he took there, I was very glad to have an opportunity of collecting on the same ground. I think I may say that I found the larger proportion of the species that he mentions as occurring there, but two or three which he found in abundance were totally absent, so far as I was able to discover. The year in which Mr. Smith found his best things was 1857, and he gives a full account of his captures in the Entomologists' Annual for 1858. No doubt that year, as he says, was unusually hot and sunny, and this year has been thus far less sunny than usual; still, I did not have a single wet day whilst I was at Deal, and I was certainly surprised at the absence of some species and the scarcity of others which one expected to find in abundance. I may take the following as examples of divergence in the experiences of Mr. Smith in July and August, 1857, and myself in July and August, 1882.

HYMENOPTERA.

Andrena Hattorfiana. Smith says: "The fine red variety, and also the black, in about equal numbers; in all, thirty fine specimens of the female, the male we were too late for. All were taken on the flowers of *Scabiosa arvensis.*" This year the black variety of the ♀ was common, but I could not get a single coloured one; I got the ♂ also, but not so commonly, and only when first I arrived, about the 20th of July: at that time both sexes frequented the flowers of *Centaurea scabiosa*, but, later on, when *Scabiosa arvensis* was in full bloom, although the *Centaurea* was still out, they appeared to visit *S. arvensis* almost exclusively.

Andrena Cetii.—"This pretty little species was plentiful on the scabious; we found every variety, including the '*affinis*,' of Kirby—the male varieties include the *A. frontalis* of Smith" (Smith). Of this insect I could not find a single specimen. The weather was fine, the scabious abundant, and the time of year and locality the same as when Smith was collecting, but no *Cetii* could I find.

Andrena simillima.—"Extremely abundant on the flowers of the blackberry; this species was taken at the foot of the cliffs, half a mile beyond Kingsdown" (Smith). This species also I could not find, but I expect I did not go far enough along the coast for it.

Andrena coitana.—"Very plentiful" (Smith). I did not meet with it.

Nomada jacobææ "in some numbers" (Smith). I did not meet with it.

Epeolus variegatus.—"Taken plentifully" (Smith). I found it, but very rarely.

Cilissa leporina "on the slope of Kingsdown it abounded" (Smith). I only found one worn ♂.

If there were any doubt as to the locality or the time of year the absence of these species might be explained, but Mr. Smith, in his article in the Annual, says: "During the latter part of July and the beginning of August," and describes the locality at Kingsdown so exactly, that it could not be mistaken; the only difference in the place seems to be that in 1857 the ground above the slope at the side of the road between Walmer and Kingsdown was waste, and now it is cultivated, but the slope itself remains in its natural state. I also took the following, which I think are worthy of notice:—

Pompilus chalybeatus, ♀, and *Wesmaeli*, ♂ ♀, on the sandhills. The latter species, with the curious spine in the middle of the ventral valve of the apical segment of the abdomen of the ♂, has only occurred in this country before at Chobham.

Miscophus maritimus, 2 ♂ and several ♀ on the sandhills.

Tachytes lativalvis, Thoms.?, ♂. I have taken 3 ♂ of a *Tachytes* with the pubescence of the face bright golden. This peculiarity Thomson gives as a characteristic of his *lativalvis*, but I only got the one sex, and do not yet feel quite certain that it may not prove to be a variety of *pectinipes*.

Prosopis dilatata, both sexes common on *Achillea millefolium*.

Colletes marginata, a few ♂, by sweeping, and several ♀ off the flowers of *Trifolium arvense*, *repens*, and *agrarium*, on the sandhills, but difficult to see, as it frequents such very low growing plants.

Cœlioxys acuminata, 4 ♀ from a small sandy pit near Kingsdown.

HEMIPTERA.

In this Order I did not capture many rarities, as my time was almost exclusively devoted to the *Hymenoptera*; Mr. E. P. Collett spent one day with me, and worked more particularly for them, and, from the result of his day's work, I should think that this year was not below the average for the *Heteroptera*. Amongst my better captures were:

Odontoscelis fuliginosus, on the sandhills.

Calyptonotus lynceus, on the sandhills, but chiefly in the larval form. I only got 2 perfect and Mr. Collett 1.

Teratocoris Saundersi, in the same locality where I took it in 1868, and apparently confined, as then, to one spot, *i. e.*, the small rushy tract just when first one enters the open ground beyond Sandown Castle, which is strewn with large stones. I took ♂ and ♀, only 2 of the latter fully developed.

Miridius quadrivirgatus, 2 specimens by sweeping.

Plagiognathus Bohemani, and *nigritulus*, the former commonly, the latter rarely, on the dwarf sallows, by sweeping and by grubbing at their roots.

Globiceps salicicola, Reut. ? (Ent. Mo. Mag., xvii, p. 13), rarely, on the dwarf sallows, by searching among the stems and at the roots. I could not get it by sweeping. I must express my great doubt as to the distinctness of this species from *flavomaculatus*. Reuter lays stress on the shape of the basal spot of the corium, but in the specimens I have (8 males and 12 females), the shape of this spot varies in both sexes from a basal triangle to a lateral vitta, extending to the apex of the corium, and triangularly widened at the base; also the carina at the back of the vertex is distinctly curved as in *flavomaculatus*. Is it possible that *flavomaculatus* also lives on the sallow, or is *salicicola* a northern form, perhaps, of *flavomaculatus?* I will send examples to Dr. Reuter, and obtain his views on them.

Nabis flavomarginatus, 1 developed ♀, by sweeping.

Holmesdale, Upper Tooting:
14th August, 1882.

Cocci and earwigs.—I have on my red currant bushes some colonies of *Lecanium ribis*, A. Fitch, which year after year increase and multiply, that is, in some years there are more absolutely than in others, and in one year they abound on one bush, and in one year all but leave it and appear on another. I speak only of the females, for the male I have never been able to find in any stage of life. The species seems distinct enough, the shell being separable by its characteristic structure from that of others of the genus resembling it, and it seems to be confined to the red currant, except that I have found occasionally, on an adjacent *Acacia*, one or two which I believe to be of the same species, but they do not occur on any other tree. Their manner of life is in this wise: in the early spring (February or March) the eggs are hatched under the hibernated maternal shell, which was in the year previous fixed on the older branches, generally under the protection of loose bark, and although the young ones soon come out from the cover, they remain close by, and for many weeks grow very slowly, remaining soft, shell-less, and of a dingy light brown colour. About the middle of May the shell becomes well defined on the growing or full-grown form, assuming a light brown colour, and having several dark brown streaks or shades, the shape being broad-oval, slightly convex. Then they gradually become more convex, the discoidal wrinkles appear, the smooth central ridge more distinct, and the colour changes to deep, shining, sealing-wax red, which is maintained throughout the following winter.

Up to the 15th of June this year the shells, growing and even full-grown to the limit of the penultimate condition above mentioned, were numerous, but then almost all disappeared, and I was puzzled to account for their absence. But, looking closely one day at the end of June, I saw, at the place where a *Lecanium* had been a few days before, two young earwigs engaged in demolishing the last remains of the departed. It is perhaps hazardous to say in this case "*ex uno disce omnes*," but I think it not at all improbable that among their capabilities the *Forficulæ* are coccivorous. If this theory be correct, then earwigs may be added to the list of beneficial insects recommended by Mr. Comstock as desirable to encourage in districts infested with injurious *Coccidæ*.

In his description of *L. ribis*, Asa Fitch has stated that, in the State of New York, it is common on the red currant, and that he supposes it was imported with plants of this fruit from Europe, which may possibly be true, although it is added, no European author has indicated any *Lecanium* living on currant bushes. (Signoret, Ess. Coch.. p. 462). As far as he was able to judge from some ♀ examples which I sent to him, and without knowing the ♂, Dr. Signoret believed this species to be distinct from any other described one.—J. W. DOUGLAS, 8, Beaufort Gardens, Lewisham: *August 10th*, 1882.

Eupteryx vittatus.—In confirmation of the note in the August No. (p. 67, *ante*), I may mention that on a large patch of ground-ivy, in a wood not far from here, I found, this morning, *Eupteryx vittatus* in the stages of larva, pupa and imago, the latter in some numbers.—E. A. Butler, Hurst Green, near Hawkhurst: *August 7th*, 1882.

Leptidia brevipennis, Muls., found in England.—Some little time ago, I received a Longicorn, very like a *Molorchus*, from Mr. Chappell, of Manchester, who said that Mr. Reston, of Stretford, had taken it in some numbers; it was, however, very different from any other British Longicorn when examined closely, so I sent it to M. Fauvel, who named it as *Leptidia brevipennis*, Muls., an insect that seems to be peculiarly French. I therefore wrote to Mr. Reston, asking him for any particulars as to its capture, and he replied as follows: "During the July of 1880, one of my servants brought me two specimens taken in the garden at the back of the house (the only two specimens then noticed). Last July, however (1881), two or three more were captured, and a day or two after they called my attention to the fact that numbers (dozens in fact) were creeping upon the floor in the scullery; upon examination, I traced them to an old basket used for potatoes, and generally kept under the slopstone, and consequently moderately damp; in this they show their presence by numerous small round holes about the size of a pin's head." After I wrote to him upon the subject, Mr. Reston submitted this basket to a professional basket maker, who pronounced it to be evidently "of French make from Dutch willows." I think that this history well deserves recording, as there can be no doubt that several of our Longicorns, and many other *Coleoptera* besides, have a still more slender claim than the beetle above mentioned to be considered indigenous. Had the captures outside the house alone been noticed, and had Mr. Reston not so thoroughly investigated the matter, the insect might very probably have found its way into the British list, especially as it is an insect that might very well be found in Britain, and is very likely at some period or other to become naturalized.—W. W. Fowler, Lincoln: *August 9th*, 1882.

Stridulation in the female of Parnassius Apollo.—In the evening of the 23rd of July, while reclining on the grass near Bannio (Val Anzasca), a rustling as of lizard or snake close to the back of my head made it desirable to look round to see what was going on there. An apparently drowsy *P. Apollo* hanging on by her fore-feet to a composite flower, deprecating the menacing brim of my hat, was slowly flapping her wings, and scraping the hinder pair with her four posterior legs, which were thrust backwards simultaneously each time that the wings opened. Obstruction to the movement of the fore-wings caused no hindrance to the production of the sound; but when the hind-wings also were held firmly between the finger and thumb, the noise ceased. The insect became so wide awake at this stage of the proceedings, that no further observations could be made; but it seemed probable that friction of the spines of the tibiæ and tarsi over the wing-veins largely contributed to the vibration of the wing membrane.—A. E. Eaton, Chepstow Road, Croydon: 18*th August*, 1882.

Acronycta alni near Bristol.—While collecting in Leigh Woods to-day with

Captain Shelley, I was much pleased at taking a full-fed larva of *A. alni* from sweet chestnut. The larva was at rest on the upper-side of a leaf, and, with the sun shining on it, presented a beautiful and conspicuous object.—W. K. Mann, Clifton, Bristol: *August* 17*th*, 1882.

Variation in Zygæna filipendulæ.—I have made further enquiry respecting the varieties of *Zygæna filipendulæ*, mentioned in the June No. of this Magazine, of the Rev. C. Wilkinson, by whom they were reared. He has collected all over his parish—Castlemartin—for the last ten years, and fully agrees with me that *Z. trifolii* is not to be found within some miles of the locality in which he collected these larvæ. Therefore, hybridism can have nothing to do with the present case of variation. (I may add that, as a matter of private opinion, that I have no belief whatever in the—supposed—effect of hybridism in producing varieties. I am quite aware that where insects swarm cases of abnormal union are occasionally observed, but all the experience to which I have any access is opposed to the belief that perfect insects, in any but the rarest cases, result from these unions).

As suggested by Mr. Briggs (*ante*, p. 43), the specimen without the sixth spot is a ♀, and the spot is only very faintly indicated beneath; the other specimen—with indistinct sixth spot—is a ♂, and the spot is distinct beneath.—Chas. G. Barrett, Pembroke: 12*th July*, 1882.

Destruction of Lepidoptera by rain.—A very short time ago I had occasion to remark incidentally on the destruction to larvæ caused by heavy rain. An instance of its effect on the perfect insects has just pressed itself most strongly and unpleasantly upon me; I suppose that when much ice is reported in the North Atlantic, these islands generally are sure to be visited with abundant and heavy storms of rain, but this west coast most decidedly bears the heaviest brunt of them. This has been the case lately, the rain has come down in such torrents that insect life could barely endure it. After a series of these storms, the 29th of last month proved a lovely day, and I seized the opportunity of passing through Canastar Wood to look for a few of the ordinary wood-flying *Geometræ*, which were wanted for a local museum. The result was nil. As far as I could judge, every *Geometra* was destroyed except a few that had just emerged. Even *Melanippe montanata* had disappeared from the wood, though still common in the sheltered lanes. There were a few *Camptogramma bilineata*, but only a few, and they were quite fine; two *Cidaria populata* also turned up, equally fine; and I found one really interesting species—*Eupithecia debiliata*, two specimens, just out; the first flew from among *Vaccinium*, but I obtained the second by following Mr. Birchall's advice of long ago, "beat holly *hard*." This is a new locality for this very local species.—Id.

Odour emitted by the male of Hepialus hectus.—When at Canastar Wood, as already mentioned, I found at early dusk *Hepialus hectus*, evidently just emerged, and in most perfect condition, flying in plenty. As it is extremely local in this country, and as I wanted series for the museum, and one or two other collections, I secured as many as I could during the few minutes of its flight—some forty males nd four females. To the fortunate circumstance of taking so large a number perfectly fresh, I attribute the discovery of a fact which I have not seen recorded—that this species, when in fine condition, diffuses a very decided perfume, almost exactly the same as the perfume given off by the *larva* of *Papilio Machaon*, when its curious forked tubercle is extruded, and more like that of ripe pine-apple than any other perfume that I know of. I noticed it faintly when turning the moths out of the pill-boxes, but when a number were pinned into a box it became very noticeable indeed. It was confined to the male moths, and seemed especially to come from the curious bladdery termination of the aborted hinder legs, but of this I am not positive. It certainly does not continue to be observable when the moths get worn. I suspect that it has some connection with the curiously inverted habits of the sexes in *Hepialus*, and seems to *attract the females*.—Id.

Captures of Lepidoptera in Yorkshire.—On Saturday last, August 5th, I found a larva of *Acronycta alni* on the upper-side of an oak leaf, in Edlington Wood, near Doncaster. Imagos of *Thecla w-album* were plentiful in the same wood, but worn, and evidently nearly over. On the bank-holiday, Monday, August 7th, the Yorkshire Naturalists' Union made an excursion to Grassington, in Upper Wharfedale. *Erebia Blandina* was flying in great abundance on all the grassy slopes in the Grass Wood, and I could, in such places, net as fast as box them. Hundreds must have been secured by different collectors, and hundreds more might as easily have been taken. Mr. E. P. P. Butterfield, of Bingley, took, on the same ground, a specimen of *Miana expolita*, a species quite new to the county of Yorkshire. But although some few interesting species have occurred, it is, I think, thus far in Yorkshire, the worst season for *Lepidoptera* I ever experienced.—Geo. T. Porritt, Huddersfield: *August 8th*, 1882.

Scoparia conspicualis, Hodg., near Doncaster.—This morning I received several specimens of this species from Mr. Prest, of York. Previously I did not know the insect, but on opening the box saw directly that it was perfectly familiar to me, and, on looking over my store boxes, I at once picked out seven nice specimens. I took them certainly two, and probably three, years ago in Edlington Wood, near Doncaster, and am pretty sure I have seen the species on the same ground each season since, but have always passed it over as a form of *ambigualis*. Probably, when its distinctive characters are well known, it will prove to be common enough.—Id.: *August 17th*, 1882.

Laverna atra.—Between 7 and 8 o'clock on the evening of the 16th inst. my attention was arrested by a swarm of 20 or 30 small black moths performing an ecstatic dance over a gooseberry-bush growing under the spreading branches of an apple tree, each individual settling repeatedly for an instant on one of the terminal leaves of a branch, and then darting off again. This temporary insanity lasted only about five minutes, and then all was still. I soon came to the conclusion that this was a *levée* of lords in waiting, thus showing their devotion to an attractive queen hidden in the recesses of the leafy bower, or, in the more prosaic phraseology of the old Aurelians, they were male moths engaged in a "'sembling match." During the fit I managed to capture six of the Lotharios, and found, afterwards, they were all males of the black form of the *Laverna atra* of our lists, not one of them, nor indeed of any that I had seen, having any of the light colour on the inner margin of the fore-wings, indicating what we specially know as *L. atra,* the dark form being reputed to be a variety of *it.*

The larva of the light-marked form is said to feed on hawthorn-berries, in September, that of the black one in budding shoots of apple in February and March (Stainton's Manual, ii, p. 399). In the spring I have seen such larvæ in the spurs of apple trees on which the blossoms normally grow, but which, by the action of the larvæ, are aborted. The autumnal larvæ in the haw-berries I have not seen, nor do I know if the black moth is ever produced therefrom, I get it only out of apple trees. Neither am I prepared to give an opinion as to the specific identity or distinctness of the two forms, which certainly are not specially separable respectively into sexes. There may have been here, as in other instances, a concomitant continuous divergence of plants and insects from an aboriginal stock, till species were established.

But whether there be now one or two species, or whether the dark form be Haworth's *Recurvaria atra* or not, which is to me a moot point, in any case it is clear, I think, that the moth with the white vitta along the inner side of the fore-wings cannot be regarded as the type of his *R. atra,* which he thus describes:—"Alis anticis toto atris, posticis toto nigris, ciliis profundissime plumbeis;" and then follow two varieties: *β*, "Alis anticis margine interiore obsolete cinereo. An distincta species?" *γ*, "Alis anticis stria seu vitta, a basi marginis tenuioris post medium usque ad costam, alba" (Lep. Brit., p. 554). Curiously, the latter *is* cited as the type of Haworth's species, but if the light-marked form (the var. *γ* of Haworth) be proved to be distinct, it will want a name, unless indeed it be the *Alucita Hellerella* of Duponchel, as Staudinger and Wocke put it (Catalog., p. 319, No. 2584). *Elachista putripennella,* Zeller, is also cited by them as a synonym of *L. Hellerella. L. atra,* type, is not mentioned. If, therefore, our dark form be specifically distinct from the light one, and it be not accepted as the *R. atra,* Haworth, *it* also will be in need of a name.*—J. W. Douglas, 8, Beaufort Gardens, Lewisham: *July 29th,* 1882.

Larva of Coriscium sulphurellum.—Ernst Hofmann, in his "Verzeichniss württembergischer Kleinschmetterlinge," published in the "Jahresheften des Vereins für vaterl. Naturkunde in Württemberg, 1882," says of *C. sulphurellum,* "Larva in May in cone-shaped leaf-ends of honeysuckle. Pupa in a flat, oval cocoon."

As this was quite news to me, I have sought diligently in other recent publications for confirmation of it.

Snellen, in his "De Vlinders van Nederland," of which the Micro-Lepidopterous portion, extending to 1118 pages large octavo, appeared this year, says of *C. sulphurellum,* "Larva still unknown." Rössler, in his "Schuppenflügler" of Wiesbaden, published 1881, says of this species, "Once taken at the beginning of July near alders, on which, according to Nolcken, the gelatinous-looking dirty white larva with a brownish head feeds in cone-shaped leaf-ends; according to E. Hofmann on honeysuckle."

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* It is possible that Herrich-Schäffer's *Tebenna vinolentella* may be intended for our black apple feeder, which I have myself bred from larvæ found in the middle of May, in the stems which bear the cluster of apple-blossoms, but Herrich-Schäffer says "found on *vines* in July."—H. T. S.

Turning then to Nolcken's "Lepidopterologische Fauna von Estland, Livland und Kurland," of which the Micro-Lepidopterous portion appeared in 1870, we read that "on the 24th July, 1862, I obtained a specimen from a larva which I had not noticed more closely. This lived, if I am not mistaken, on alder, and was gelatinous-looking dirty white, with transparent internal canal and brownish head." Nothing is, however, here said of how the alder leaf was treated, the *cone-shaped leaf-ends* mentioned by Rössler (though likely enough if the insect really fed on alder) is not information supplied by von Nolcken. Moreover, the latter throws an air of doubt over the specimen having been really bred from *alder*, by saying, "*if I am not mistaken,*" a parenthesis which is not quoted by Rössler.—H. T. STAINTON, Mountsfield, Lewisham: *August* 16*th*, 1882.

Gelechia maculiferella at Lewisham.—A week ago I could have said not only that I had never taken this insect, but that I had never seen it alive on the wing (having only once seen a living bred specimen). On the evening of Saturday last, August 12th, walking by the side of a hawthorn hedge, I noticed some dark grey moths on the wing, which I could not at a glance recognise; having no net in my hand, I made use of my hat, and was startled to see for a moment (for he was soon out of my hat again) a specimen of *Gelechia maculiferella.* Being near home I went and fetched my net, and as long as the day-light lasted I was fully occupied boxing this species, and secured 16; perhaps the most singular thing was that I did not, when boxing them in the dusk, without any clear knowledge of what was in my net, box a single moth of any other kind. There must have been hundreds on the wing along that hawthorn hedge that evening!

The weather was not propitious for several of the following evenings, but on Wednesday, August 16th, though they occurred in much less numbers than on the previous Saturday, I secured 9, and last night I boxed 6 more. Amongst the 31 specimens thus captured a fair proportion are females.

The insect, as is well known, belongs to that group of the genus *Gelechia* which is attached to plants of the natural Order *Caryophyllaceæ*, my bred specimen having fed in the larva state on *Cerastium semidecandrum*, near Frankfort on the Main (it emerged June 26th, 1863), and it is quite possible that it may feed and thrive on *Stellaria media*, a plant which is *very generally* distributed; still its occurrence in such plenty *on the wing* seems curious, especially when I bear in mind that its close ally, *Gelechia fraternella*, which used formerly to be very plentiful in the larva state in this neighbourhood, has scarcely ever been noticed by me in its perfect state, thus showing that some of this group, at any rate, lead very concealed lives.

Oddly enough, three specimens which I received from Herr Joseph Mann, of Vienna, more than 30 years ago, were taken by him on the trunks of *hawthorn* trees. Had I not actually *bred* the insect, I might thus have been led to the erroneous conjecture from the flight of last Saturday, that the insect had fed upon the hawthorn hedge it swarmed along.

For the series of *G. maculiferella* in my collection I am mainly indebted to Mr. C. G. Barrett, who supplied me liberally in September, 1874; I believe his specimens were captured near Peckham.—ID.: *August* 18*th*, 1882.

Abundance of Lithocolletis platani, Stdgr., at Pallanza.—On the 19th of last month (July), I arrived at Pallanza on the Lago Maggiore from the Val d'Anzasca, and at once set to work to examine the neighbourhood of the town. The elms, acacias, &c., on the shore of the lake only afforded shade sufficient to make the intense heat more apparent; so I started for the country along a road that was shaded on either side by fine plane-trees (*Platanus orientalis*). Even from a distance it became evident that the large leaves were dreadfully disfigured by the whitish mines of some larva, which, for the moment, I thought must be Dipterous. Closer examination shewed that the depredator was Lepidopterous, that, probably, no leaf was left unmined, that sometimes at least twenty mines occurred in a single leaf, and that they were *usually* on the under-side, *but occasionally on the upper-side.* Enquiring subsequently at Paris, "What *Lithocolletis* mines the leaves of plane-tree?", I was told it was *L. platani*, Stdgr., and that I should have collected the mines wholesale: the latter could have been easily done, but I doubt if any of the larvæ would have survived.

L. platani is a comparatively recently described species. It was first noticed by Staudinger, in the Horæ Soc. Ent. Rossicæ, for 1870, p. 277, and the describer states it was found by him at Bellaggio, on the neck of land between Lago di Como and Lago di Lecco (and also by Dr. Krüper, at Attica, in Greece), that it was in extreme abundance, and that sometimes forty mines (!) were contained in a single leaf, so that my own more humble estimate of "at least twenty" is quite eclipsed. Dr. Staudinger, in a letter to Mr. Stainton, dated August 29th, 1868, mentions that he had even found *one* leaf which contained *fifty-four mines* (See "Tineina of Southern Europe," p. 140).

I find that Emilio Turati, in his "Contribuzione alla fauna lepidotterologica lombardo" (Bull. Soc. Ent. Ital., 1879, p. 206), records it from Milan and Brianza, with the remark: "Comunissima sui platani, le cui foglie ne portano parecchie mine l'una accanto all'altra nella pagina inferiore."

The following observations occur to me:—Notwithstanding the extreme local abundance of the insect, it is still sufficiently rare in collections to be coveted as a desideratum.

The "Oriental-plane" is not supposed to be a native of Europe (properly so-called). It is extensively cultivated as a "shade-tree" in all the warmer parts of Europe. Is its leaf-miner equally widely distributed, but overlooked?

If a large number of eggs ("at least twenty") be laid on a single leaf, it by no means necessarily follows that all were laid by the same moth. But some instinct appears to be at work and causes the eggs (in any case) to be placed so far from each other as to enable the larvæ to avoid entering upon each other's mines: the leaves are large, so also are the mines.—R. McLachlan, Lewisham: *August*, 1882.

Reviews.

The Butterflies of North America; by W. H. Edwards. Second Series. Part X. Boston: Houghton, Mifflin & Co. London: Trübner & Co. 1882.

The individual parts of this work have, so often as they appeared, been alluded to by us in terms of almost unqualified approbation.

Some would no doubt wish that the intervals between the publication of each part were not so extended. Others might qualify this by an expression of opinion that haste might foster inaccuracy. Mr. Edwards commits himself to no stated period of publication, and no one will presume to question the nervously-exercised care exhibited in each part.

Only two "species" are considered in Part X, viz., *Satyrus Alope*, F., and *Heliconia Charitonia*, L. To the former two magnificent plates are entirely devoted. As is usual, Mr. Edwards takes the philosophical view as to what should zoologically be termed a "species."

In his history of *Heliconia Charitonia* he has had an opportunity of philosophizing upon the habits of the only species of an otherwise extensive genus that falls within his faunistic limits. We need scarcely remind our readers that the genus has long been "notorious" in many ways, and much of the information here given (even for the species) has been discounted; but *all* the details are now before us.

The Part concludes with a commencement (from *Papilio* to *Argynnis*) of a "Synopsis of North American Butterflies; revised and brought down to 1882." A critical analysis of the author's views, as enunciated in this Synopsis, cannot fail to be instructive, and especially so, if made in conjunction with that of the writings of contemporary authors.

RHOPALOCERA MALAYANA, a description of the Butterflies of the Malay Peninsular; by W. L. DISTANT. Parts I & II, April and July, 1882. London: The Author, care of West, Newman & Co. Royal 4to.

We have before us the first two parts of this truly magnificent work, the inception of which was due, in the first instance (as the Author states), to Mr. D. Logan, of Penang. The Author's former residence in the Straits Settlements peculiarly fits him for the production of a work such as this. Judging from the two parts already published, it bids fair to take a scientific position far above the ordinary run of "Butterfly books." The descriptions are clear, and are always accompanied by copious comparative, geographical, and philosophical notes, showing that the Author has thoroughly read up his subject. The plates (of which there are four in each part) are at present in advance of the letter-press, and are in the best style of chromo-lithography, with occasional supplementary "touching up" by hand, every species being figured (as are also the more prominent varieties). It might have been better had the title of the work been limited to that indicated in the second half of the actual title, the first half being open to a far wider interpretation than is warranted by the second.

AN ILLUSTRATED ESSAY ON THE NOCTUIDÆ OF NORTH AMERICA, with "a Colony of Butterflies;" by AUGUSTUS RADCLIFFE GROTE, A.M., &c. Pp. 1—85, with four coloured plates. London: John Van Voorst. 1882. Royal 8vo.

An exact counterpart, so far as external appearance is concerned, of Lord Walsingham's "*Pterophoridæ* of California and Oregon." The first 23 pages are occupied by a lengthy Preface, in which is a good deal of rudimentary information, that might well have been omitted, as already familiar to every Entomologist; also very instructive details of the progress of knowledge of North American *Noctuidæ*, in which the Author modestly gives himself but small credit; some excessively severe strictures on a prominent economic Entomologist (the work is dedicated to another equally prominent); and finally, an enumeration of those workers who have helped the Author, the last named being Mr. George Norman, whose decease we chronicle below. "Structure and Literature" form the second chapter, and will repay careful reading.

Then follows "Notes on Mr. Walker's types of North American *Noctuidæ* in the British Museum," which are succeeded by descriptions of 45 species, every one of which is figured. We think it would be impossible to surpass these figures, either by care in engraving, or by delicacy or truthfulness of colouring, and they may serve as models in all respects but one. Why *will* so many entomological artists persist in considering that *Lepidoptera* are *legless* ?

"A Colony of Butterflies" is a dissertation on the manner in which *Œneis Semidea* came to inhabit its isolated position on the top of Mount Washington in New Hampshire.

It is no secret that bad health has compelled the well-known author of this little book to give up (let us hope only temporarily) his entomological labours, and that the extremely valuable collection of American *Noctuidæ* formed by him now forms part of our own National Collection. This latter fact probably explains why he has elected to print and publish the work in London.

Obituary.

George Norman died suddenly at Peebles on the 5th July last, in his 59th year, he having been born in Hull on the 1st January, 1824. He was educated, in part at least, in Germany, and was afterwards engaged in mercantile pursuits in his native town. In 1843, he first wrote in the "Zoologist," and for twenty years he continued to send to that Journal occasional notes in all branches of Zoology. After his retirement from business he removed to Scotland, residing, with occasional intervals, at Forres, and in 1869 and three following years he communicated to this Magazine copious lists of his captures of *Lepidoptera* in Perthshire and Morayshire. In 1874 and 1875 he was in Canada, and in our vols. xi and xii are long lists of the *Lepidoptera* he found in the province of Ontario. On his return he devoted his attention to the *Hemiptera* of Perthshire and Morayshire, making captures of many rare species and some new ones, which are recorded or described in vols. xv to xviii. In March last he went to Peebles, intending to work specially at the *Hemiptera* of that district, and now we have the sad news of his unexpected end. *Sic transit!*

Mr. Norman had much of the true spirit of a Naturalist, and was a very courteous and obliging man, thinking no trouble too much if he could thereby serve his friends and the cause of Entomology.

ON SOME POINTS IN THE ECONOMY OF *ZARÆA FASCIATA*.

BY J. A. OSBORNE, M.D.

On the 10th of September, last year, I found some larvæ of a saw-fly feeding on the leaves of snowberry in my garden. By the 22nd of the month they had all spun-up, making dark brown (resinous-looking) cocoons, which, at the end of March and beginning of April of the present year, yielded four female flies of *Zaræa fasciata*. On the 5th of June, following, a fifth female was excluded, besides these there were, May 30th—June 5th, four ichneumon flies of a smaller species; and on June 29th and July 10th, two of a larger species. All the saw-flies were females and all laid eggs which developed *parthenogenetically*. I do not know whether any of these eggs would have failed to develop for intrinsic reasons, but many perished through unfavourable external conditions. The eggs were laid singly in mines formed beneath the (upper) epidermis of the leaf; and, being inserted at the edge of the leaf, formed a sort of beading round its circumference. As snowberry is not a native plant I offered some of the flies leaves of honeysuckle (belonging to the same Order), and elder, and in these likewise they laid eggs which hatched out in due course; but the young larvæ refused to feed on these plants, though older ones eat honeysuckle freely enough. I had also eggs laid in leaves of osier and oak; and I have no doubt these flies would oviposit in almost any practicable leaf, and that the eggs would hatch if due conditions of moisture, &c., were maintained. Some eggs that were laid loosely in the pots, and were never in any leaf at all, I reared on pieces of glass by keeping them constantly moistened with pure water in a covered vessel. I likewise repeated the same experiment successfully with the eggs of *Nematus ribesii* (*ventricosus*, Kl.). The growth of the egg, then, by which it attains about three times its original size, can only be due to the imbibition of water, and owes nothing to any nutritive juices derived from the plant. In the case of *Nematus*, indeed, it is hard to see how anything but moisture could be derived from the plant, as no incision in the leaf is made, and the eggs are simply deposited on the under-surface of the nerves. After four moults the larvæ spun up among surface-clay and leaves: but although the earliest cocoons were made on 18th May, no flies have been excluded from any of them yet. It is probable, therefore, that the insect is not double-brooded as I at first supposed, and that the development of my last year's cocoons was hastened by their being kept in the house all winter. At present (2nd September) I find the larvæ in great abundance on the snowberry bushes in my garden. I am not consequently in a position yet to say anything positive as to the sex of the parthenogenetic brood. Most of the larvæ, however, attained fully the size of those last year from which I got nothing but female flies. In the case of *N. ribesii*, when the larvæ are fed-up it is easy to distinguish the males from the females by the difference of size, the former being about ⅔ the length and ⅓ the bulk of the latter. A similar and equally marked differentiation into two sizes was observed among the full-fed larvæ of *Zaræa*, but very few of the smaller ones succeeded in making cocoons—many, indeed, of both sizes perishing at this stage.

The saw is of the usual S- or sabre-shape, with the distal convexity looking ventrally or forwards. Each sheath is barred transversely with lighter and darker (chitinous?) lines. The saw itself is not entirely separable from its sheath, as figured by Réaumur in the case of other saw-flies; but is connected with the sheath by short (muscular?) ligatures, running from the lighter (inter-chitinous) bars of the sheath to the back of the saw. The operation of making the mine and depositing the egg, which occupies 1½—2 minutes, is very easily witnessed, especially in the more transparent snowberry leaf, with the aid of a lens. The fly sits on the edge of the leaf holding it firm between the apical spines of the posterior tibiæ. The ovipositor being inserted under the epidermis is first thrust backwards, parallel with the edge of the leaf, to its full extent, and then swept round till it lies again under the edge of the leaf in front of the point of insertion, which is situated rather behind the middle of the mine—the saw all the while playing with short quick strokes, which gives it somewhat the appearance of watchwork running down. The mine so made has a shape or contour not unlike that of the human stomach, the place of insertion (of the saw) corresponding to the cardiac orifice of the stomach, and the anterior portion of the mine answering to the pyloric end of the viscus. The ovipositor is next brought back to a position midway in the mine and at right angles to the axis of the fly; and after a short delay the egg descends between the two blades with its long axis also at right angles to that of the fly. The egg is green in colour, and in shape crescentic with the horns rounded-off. While it is between the blades of the ovipositor the lowermost end (in advance) would correspond with what should be the posterior or caudal end; and the concave edge, looking forwards, with the ventral surface; supposing its parts to have the same relations as the eggs of other insects. But when the egg is escaping from the blades of the ovipositor it makes a turn of 90° in the mine, by which the first-laid end comes to look forwards (*i. e.*, in the direction of the head of the fly), and the concave side to look upwards (*i. e.*, in the direction of the back of the fly); and so the position of the egg comes to be exactly the reverse of what it would have been if simply extruded backwards in a line with the parent. Nevertheless, the convex side, or what in the case supposed would have been the *dorsal* aspect, becomes the seat of the development of the embryo. Having withdrawn the ovipositor, the fly presses together the lips of the wound with the two valvular pieces between which the ovipositor lies when not in use, possibly having injected some glutinous liquid by means of which the aperture is obliterated. The mine is now a closed cavity, and, as the egg grows, shows like a little blister on the leaf. Generally no change whatever takes place in the parenchyma, but in a few instances I have observed a growth of rather large globular cells bursting off the epidermis covering the egg; and indicating perhaps a transition to gall-growth. I am not able as yet to say positively which end of the egg is occupied by the head of the embryo, but in all cases observed the ventral side of the embryo lay along the convex side of the egg, development commencing as usual in the *Articulata* (and *Vertebrata*) on the *neural* side. [*v.* Huxley, Anat. of Invert., p. 667]. But at a certain stage in the development, the embryo will be found doubled-up in a loop with its ventral side occupying the middle; the first half of the dorsum, lying along the concave side of the egg, now become straight by the growth of the egg; and the posterior half along the convex side, while head and tail are in contact.

This is the position of the Lepidopterous larva immediately before hatching (*P. brassicæ*, *Rumia cratægata*, &c.), and how it gets into this position, if it develops in the usual arthropod way, is a point which I have only seen adverted to by Kowalevski. Speaking of the development of *Sphinx populi* and *Gastropacha pini*, he says (Embryolog. Studien an Würmern und Arthropoden. Mémoires de l'Acad. imp. des Sciences, &c., p. 56):—"Wenn der Rücken schon gebildet ist, biegt sich das Schwanzende des Embryo auf die Bauchseite und zwar so, wie wir schon beim Hydrophilus gesehen haben. Dem Hinterende folgend, dreht sich der ganze Embryo so, dass er jetzt der ihn noch bedeckenden serösen Hülle den Rücken zuwendet, und die Extremitäten erscheinen nach innen gerichtet. In diesem Zustande, mit fast vollständig ausgebildeten Organen, bleibt der Embryo vollständig in dem ihn umgebenden Dotter, den er nun vermittelst der unterdessen vollständig ausgebildeten Mundorgane zu verschlucken beginnt * * * die * Larve liegt [jetzt] schraubenförmig auf der Bauchseite zusammengerollt bis sie das Chorion zerreisst und ins Freie gelangt." The *Zaræa* embryo, at any rate, does not get into the loop position by any molar movement of this sort. When the posterior end of the growing embryo has reached the remote end of the egg, it is bent ventrally on itself, and so *grows* forwards till the tail comes to be in contact with the head. As the length of the embryo still continues to increase, the head is withdrawn to about the middle of the straight or upper side of the egg, and the larva, about to hatch, lies in a spiral, with the tail opposite the head on the other side of the body. It turns its sharp mandibles towards the shell, bites at it and draws it in till it is pierced, and, by means of a foot thrust through the opening, draws the flexible chorion still more within the power of the mandibles, which soon effect an opening large enough for its escape. This ingrowth ventrally of the caudal end of the embryo appears to be not uncommon in the *Arthropoda*, where the length of the embryo exceeds that of the shell; and occurs even in the case of the globular egg of *Astacus*, as described by Huxley (The Cray-fish, p. 203). In the case of an embryo making such a revolution in the egg, as that described by Kowalevski, the head would occupy two different positions in the same end of the egg, relatively to two opposite sides, before and after the revolution. The egg of *Rumia cratægata* would be specially favourable for making this observation; the shell at the cephalic end being distinguished by an ellipsoidal ridge: the pointed end of the ellipsoid corresponds with the position of the head of the larva just before hatching; and, of course, the rounded end to that of the tail. While the embryonic venter is still external, the relative positions of these parts, on Kowalevski's principles, should be just the reverse.

Milford, Letterkenny, Ireland:
4th September, 1882.

Capture of Crabro gonager, ♀, *in Gloucestershire.*—I took a ♀ of the above rare species of *Crabro*, at Wootton-under-Edge, Glos'ter, on the 29th August, this year. I found it, together with considerable numbers of *C. podagricus*, on the common garden parsley. This is, I believe, the first record of the capture of the ♀ in this country, although I have taken the ♂ several times near the same spot. In comparing my specimen with the description of *gonager*, given by Thomson in his "Hymenoptera Scandinaviæ," it appears to have the pale ring of the posterior tibiæ unusually narrow, and the scape of the antennæ entirely black.—VINCENT R. PERKINS, 54, Gloucester Street, South Belgravia: 11*th September*, 1882.

ON THE STRANGE *COLEOPHORA* REPUTED TO FEED ON WHEAT IN RUSSIA.

BY H. T. STAINTON, F.R.S.

Some months ago I was sorely puzzled by being told that a new *Coleophora* had been lately described by Professor Lindeman as feeding on wheat, and that specimens had been submitted to me for my opinion some time previously.

I often now-a-days complain of the tricks my memory plays me, but as I could remember nothing of this mysterious chapter of *Coleophora* life, I sought to find some letter from Professor Lindeman amongst my foreign letters. Further, I have a habit of entering day by day in a little book the names of the writers of any Entomological letters I receive, and in the case of Foreign Entomologists, I also enter the dates when I write to them. On neither side of the entries in this book did the name of Professor Lindeman occur, nor could I find any letter from him had ever reached me!

It was some weeks before this mysterious occurrence was cleared up, though like many other mysteries, when the explanation did come it was simple enough. The fact was I had had no direct communication with Professor Lindeman at all. He had communicated with the "Société Impériale des Naturalistes de Moscou," that Society had put itself in communication with the Entomological Society of France; the problem for solution on reaching Paris fell into the hands of my friend Monsieur Ragonot, and he, writing to me soon afterwards, propounded the question to me, "Here are certain *Coleophora* cases; what species do they produce?"

The name of *Professor Lindeman* did not occur in the query which I received, nor was any mention made of *wheat*. I was simply informed that the Society of Moscow had sent these cases to the French Entomological Society, with the notice that *great quantities* of them had been found on the stems of grasses in Southern Russia. Was it wonderful, then, that I had no recollection of Professor *Lindeman* and his *Coleophora* on *wheat?*

Monsieur Ragonot, who is himself a very high authority in all matters relating to *Micro-Lepidoptera*, remarked, in his letter of November 20th, 1880, "These cases remind me of those of the species attached to the *Caryophyllaceæ*, such as *silenella*, *dianthi*, *nutantella*, &c., and it is possible that such a species peculiar to Southern Russia, after having fed on a low plant, would leave it and mount up the stems of grasses." (See Annales de la Soc. Ent. de France, 1881, Bull. xiv).

My own view of the cases in question was expressed in my letter to Monsieur Ragonot of December 8th, 1880. "I think the Russian *Coleophora* cases come nearest to those of *C. inflatæ*, so this certainly confirms your idea that they belong to the group which feed on the *Caryophyllaceæ.*"

It was not till the beginning of last June that I had an opportunity of studying in the pages (39—42) of the "Bulletin de la Société Impériale des Naturalistes de Moscou; année 1881," Professor Lindeman's article on "*Coleophora tritici,* ein neues schädliches Insekt Russlands."

Professor Lindeman says, "Two years ago I received from the government of Poltawa some cases of a *Coleophora* larva, which, living on the ears of summer-wheat, eats out the grains. Whilst the wheat is growing these larvæ are not perceptible, since they make no striking change in the ears, and eating only the grains beneath the chaff lead a well-concealed life. But in the autumn when the corn is thrashed, the firm and hard cases are thrashed out with the grain. Universal astonishment was caused by the quantities of these small cases, which, from their lightness, are readily sorted out from the grains of corn, forming entire heaps."

"A year later, in the autumn of 1880, I again received, but this time from the government of Riazan, the same *Coleophora* cases, with the notice that on thrashing the oats these had been thrashed out from them, and that too in such enormous quantities, that they at once attracted the attention of the labourers. At the same time the results of the harvest turned out very badly, which may certainly be, at least to some extent, attributed to these *Coleophora* larvæ."

"The cases I received contained only dead, but quite full-grown larvæ. Those sent the first time were all dried up; those sent the second time were in spirits, so that I had no possibility of rearing the perfect insect. This I the more regretted as no author seems to have described any species of *Coleophora* feeding on corn, and no where in Europe has the attention of Entomologists been drawn to such an injurious insect."

Professor Lindeman then says, "On meadow-grasses (*Holcus* and others) some *Coleophoræ* have been mentioned by Kaltenbach and Wocke, the larvæ of which feed on the seeds of grasses (*Col. lixella, murinipennella, cæspititiella*), but my cases are quite distinct from these."

This last sentence contains an important mis-statement; as none of the *Coleophoræ* to which he is there alluding feed on the *seeds* of *grasses*. *Murinipennella* and *cæspititiella* feed on the seeds of *Juncaceæ,* and *C. lixella* (and he might have added *ornatipennella*) feed after their earliest youth on the leaves of grasses. (The larvæ of both these last-named species feed in autumn in their infant state in the flowers of labiates, and do not attack the leaves of grasses till the following spring.)

Professor Lindeman adds: "I had hoped, in the autumn of this year (1881), to receive some living larvæ of this species, being anxious to breed from them the imago; but in both these expectations I have been disappointed; I, therefore, publish what I at present know about this new foe to our corn-crops, in order that the attention of others may be drawn to the subject."

He then mentions having, through the medium of the French Entomological Society, submitted some of these cases to Ragonot and Stainton, and having received in reply the assurance that "the cases undoubtedly belonged to a *Coleophora*, which should be in the group which comprised *C. nutantella*, Mühlig, *C. silenella*, H.-S., &c., and that it was probably quite new," and that, on the strength of this communication, he ventured, without knowing the perfect insect, to name it provisionally *Coleophora tritici*.

As the cases came to Paris as those of a *Coleophora* found on *grass-stems*, and no mention was made of the larvæ having fed on the *grains* of *wheat* or *oats*, the entomological doctors consulted were scarcely in a position to pronounce an opinion likely to be of much value. I do not for a moment suppose that they were purposely kept in the dark, the mistake has probably arisen through the transmission of the query through so many different hands. I, however, call attention to the fact, as probably it may tend to prevent any similar blunder in future.

Professor Lindeman remarks that "the cases are composed entirely of silk, "without any intermixture of grains of sand, or any other foreign substance;" but, he says, "that they are so firm and hard, that the operation of thrashing the corn does not injure them." I am not sure that he does not even mean that the *larvæ* escaped uninjured after undergoing the process of thrashing! Silk of such a texture ought surely to be worth cultivating!

This notice of Professor Lindeman's has reminded me of a *Coleophora* larva I once received from the late Mr. J. F. Brockholes. His letter is dated, "16, Cleveland Street, Birkenhead, October 10th, 1859," and reads as follows:—

"I have lately found the enclosed *Coleophora* cases in some plenty in a stackyard near here. They were on young oats growing from shed seed and grass. Two or three stems of the grass are enclosed, as also some oats. There seems to be a difference in the cases as well as larvæ. There may be two kinds among them. They are new to me, and I do not find them in the volume of the genus lately published. What are they?" As the grass sent did not appear to be eaten in any way, I wrote for some further information, but was unable to obtain any; Mr. Brockholes' reply, dated October 23rd, 1859, was as follows:—

"I can give you no information at present about the *Coleophora* cases. The grasses are dying down, and the cases seem to be principally made up for the winter. In spring I shall be better able to find out something about them."

The case I have described as "ochreous or brownish, with some darker stripes, rather stout and short," and, if I am not mistaken, it was very similar to the case of *annulatella*; thus differing very considerably from the case of Lindeman's *tritici*.

In the answers to enigmas, at p. 114 of the Entomologists' Annual for 1861, we read of these Birkenhead stack-yard larvæ: "Mr. Gregson sent me a specimen of *Coleophora annulatella*, as having been bred from the larvæ referred to last year. But I am strongly disposed to think some error has crept in here."

I am now rather disposed to think, however, that the larva may, indeed, truly have been those of *annulatella*, and that the *error which had crept in* was in the assumption that they had fed either on the oats or on the grass. *Annulatella* occurs by hundreds on the *Atriplex* which grows along the ground in corn fields; would it be at all wonderful if some dozens of the larvæ got carried to the stack-yard?

Mountsfield, Lewisham:
August 18*th*, 1882.

NATURAL HISTORY OF *EPHESTIA PASSULELLA*.

BY WILLIAM BUCKLER.

On the 4th of September, 1881, Mr. Sydney Webb very kindly sent me a batch of eggs of this small species, laid loosely by the parent moth, which he had captured in the Oil-Cake Company's Warehouse a short time before.

The eggs began to hatch on the 8th of September and continued to do so at intervals for two or three days, and the little larvæ were confined with some pieces of the pod of the "Locust-bean" of commerce, which Mr. Webb had also kindly provided for them, and in course of a week they could be seen to have grown, and by end of the month very much more grown, and by the middle of December some of them were as long as 6 mm.

During the winter months I saw but little of them, when from time to time I found it needful to replenish their food in consequence of the large accumulation of frass at the bottom of their residence (resembling coffee-grounds) they having denuded the beans by devouring the substance of the pod; and, moreover, they had already made, and continued to make, any observations on my part very difficult, and of their moulting impracticable, by completely obscuring their surroundings with a dense spinning of whitish-grey silk; and they had lined with silk the little tunnels excavated amongst the refuse.

By the beginning of April, 1882, they, however, began again to show themselves and were grown considerably, and yet required a further supply of their food, as by this time a prodigious quantity of frass had been made.

The first specimen of the perfect insect was bred on the last day of April, others followed on the 12th of May, others again on June 1st and 4th, and the last on the 14th of July.

The egg of *passulella* is elliptical in shape with bluntly-rounded ends, and finely pitted surface, whitish at first and soon of a delicate straw-yellow; two days before hatching it assumes an ochreous tinge, and the next morning a light brown spot appears at one end, and within a few hours the larva is hatched.

At first the young larva is of a whitish-ochreous tint with a brown shining head and very narrow plate across the second segment, and when nearly a month old has a faint tinge of reddish, or pinkish-brown, the head very dark brown and the plate still narrow, but at this time with very little more colour than the body.

At the age of three months the body is of a light brownish-pink colour with reddish-brown head and a blackish-brown plate on the second segment, and another on the anal flap, and there is a pinkish-brown dorsal line showing very faintly; the minute tubercular shining brown dots can be very well discerned.

When full-grown the larva measures 10 mm. in length and is of moderately slender proportions, cylindrical though tapering very slightly at each end, the segments having a subdividing wrinkle across the middle of each, and the legs are much under the body; in colour the head is reddish-brown and glossy, and it has a margin of pale skin in front of the shining black and brown neck-plate, which is dorsally divided with a line of the pallid ground colour of the thoracic segments, and beyond them this ground-colour imperceptibly is changed to a faint flesh-colour, in some instances a very pale tint of drab; the small dark brown and shining tubercular dots, each furnished with a fine hair, are ranged on either side of the back in twos forming in line along the sub-dorsal region, those on the front of the thirteenth segment are large and squarish; the anal plate is of the same dark brown colour and rather heart-shaped; a single row of dark brown dots is along the side and others are beneath; on either side of the second segment is a largish black-brown shield-like glossy spot in front of the spiracles; another, similar, occurs on the outside of each anal leg, the ocellated spot on either side of the third and twelfth segments is black with white centre; the skin generally is soft, smooth and glistening: some individuals show a faint purplish-brown dorsal line, while others have only a faint darkness sliding to and fro beneath the skin of the seventh aud eighth segments.

When full-fed the larva envelopes itself in a pearly-greyish oval cocoon of silk about 8 mm. long by 3 in diameter, smooth within but thickly covered outside with grains of frass spun together and situated generally in some excavated portion of the pod it has fed in.

The pupa is from 5½ to 6 mm. in length and is of an ordinary form, with prominent eye-pieces and longish wing-covers; the tip of the abdomen ending in an excessively small round thorny boss; its colour darkish bronzy-brown and shining.

Emsworth: *August* 14*th*, 1882.

NOTES ON CERTAIN *MICRO-LEPIDOPTERA.*

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

Finding it necessary to go through Professor Zeller's paper on "Exotische Microlepidoptera" in the "Horæ Societatis Entomologicæ Rossicæ" for 1877, before attempting to do anything further with an American collection in my hands, I was enabled to recognise several synonyms which I think it important to put on record.

The genus *Donacoscaptes* is very closely allied to, if not identical with, Walker's genus *Ertzica* from Java (Lep. Het. Suppl., v, p. 1768): if identical, Walker's name will take priority.

Argyria obliquella, Zeller, is my *Argyria candida*, which it will supersede: both are described from Japan.

Melissoblaptes gularis, Zeller, is my *M. tenebrosus*, which it will supersede: both are from Japan.

Anchoteles perforatana, Zeller, is Walker's *Uzeda torquetana* from Rio Janeiro (Lep. Het., xxviii, p. 443), of which it will be a synonym.

The genus *Choregia* is identical with *Tortyra*, Walk., *C. fulgens*, of Felder and Rogenhofer, being a synonym of Walker's *Tortyra spectabilis*.

The genus *Acureuta* is Walker's *Tiquadra*,= *Oscella*,= *Manchana*, as already pointed out by Lord Walsingham (Trans. Ent. Soc., 1881, p. 235).

The genus *Setomorpha*, Zeller, will supersede my *Chrestotes*.

Psecadia xanthorrhoa, Zeller, is probably *P. notatella*, of Walker (Lep. Het., xxviii, p. 536, n. 17), the only difference that I can discover in Walker's type is the absence of the black spot on the fringe of primaries.

Psecadia circumdatella, Walker, falls into Walker's genus *Azinis*.

Cryptolechia radicalis, Zeller, appears to me to be *C. confixella*, of Walker; but this must, for the present, remain doubtful.

C. læviuscula, Zeller, is identical with *C. scitiorella*,= *C. filiferella*, Walker.

C. muscula is evidently nearly allied to my *C. urbana*, and *C. residuella* to my *C. strigivenata*.

C. Erschoffii, Zeller, appears to be Walker's *C. humeriferella*.

Antæotricha purulenta, Zeller, is allied to *A. adjunctella*, and *A. lignicolor* to *A. basirubrella* (both described by Walker under *Cryptolechia*).

The genus *Epicorthylis* is synonymous with Walker's *Vazugada* (Lep. Het., xxix, p. 803); *E. cinnamicostella* being closely allied to *V. strigiplenella*.

Gelechia scutella, Zeller, appears to me to be Walker's *G. subscriptella*, from which it only differs in the slightly browner pale markings on the external area of the primaries.

Œcophora dichroella, Zeller, is *Œ. divisella*, of Walker, and is closely allied to *Œ. concisella* of the same author.

Under *Œ. irruptella*, Walker, it appears to me that Professor Zeller has another species which will account to him for its wide separation from *Œ. arabella* in Walker's Catalogue: it certainly does not strike me as being nearly allied to that species, the primaries being of a bright, shining, pale straw-yellow, with the costal margin purplish-brown; the external two-fifths are purplish-brown, but deeply incised close to the costa, the yellow ground-colour being projected half way across it towards the apex; the secondaries are golden-cupreous, slightly purplish towards the outer margin; the head is dull pale yellow, the body greyish-brown, with the collar and tegulæ darker and bluish; the hind tibiæ are clothed with long brown (not ochreous) hair: the entire insect is decidedly smaller than *Œ. arabella*, and much more nearly allied to *Œ. divisella*.

Œ. trijugella, Zeller, is Walker's *Œ. bracteatella*.

Œ. griseicostella, Zeller, is certainly Walker's *Œ. productella*: the colouring of the secondaries is very variable, and Walker's "fawn-coloured" stands for half a dozen different tints; in this case it is a dark greyish-brown.

I believe that the above notes will clear up most, if not all, of the synonyms in connection with this most valuable paper of Professor Zeller's.

British Museum: 31*st August*, 1882.

DESCRIPTION OF A NEW SPECIES OF *PENTATOMIDÆ* FROM MADAGASCAR.

BY W. L. DISTANT.

The genus *Memmia* is peculiar to Madagascar, and, like many other genera belonging to that fauna, is a modification of a closely allied African genus. In this case, *Memmia* is allied to *Atelocera*, both of these genera having but four-jointed antennæ, the second joint of which in *Atelocera* is dilated, and in *Memmia* is simple.

Two closely allied species have hitherto represented the last named genus; a third, collected by the Rev. Deans Cowan, is here described; it can be at once recognised by the great length of the scutellum.

MEMMIA COWANI, *n. sp.*

Head black, coarsely punctate, with a short, central, basal, longitudinal, ochraceous fascia; antennæ black, the basal joint just passing apex of head, second joint much the longest, third joint slightly longer than fourth; rostrum black, not quite reaching posterior coxæ. Pronotum reddish-ochraceous, very coarsely and darkly punctate, the lateral margins and a central longitudinal fascia, pale ochraceous and lævigate; on the inner-side of lateral margins the puuctures are somewhat confluent, thus rendering the colour almost black; anterior portion of lateral margins deeply crenulate; remaining portion, including lateral angles, which are sub-prominent and rounded, very finely and indistinctly crenulate. Scutellum long, passing the apex of corium, reddish-ochraceous, coarsely and darkly punctate, with an indistinct, central, longitudinal, ochraceous line. Corium reddish-ochraceous, coarsely and darkly punctate, with a pale lævigate spot on posterior portion of disc, and the base of costal margin also pale lævigate. Membrane small and very pale fuscous. Abdomen above black; connexivum pale ochraceous. Body beneath and legs black, abdominal margin pale ochraceous. The under-side of the body is also more or less thickly clothed with ochraceous pubescence, which, on the abdomen, does not outwardly extend beyond the stigmata, nor inwardly to discal centre. Anterior femora spinous beneath, more prominently so on apical third.

Long. 17 mm. Exp. pronot. ang., 9½ mm.

Hab.: Madagascar.

East Dulwich: *September*, 1882.

RE-DISCOVERY OF *PERLA FERRERI*, PICTET.

BY R. McLACHLAN, F.R.S., &c.

So far as I am aware, nothing has been published concerning *Perla Ferreri* since it was first described by Pictet in his "*Perlides*," p. 210, pl. xviii, figs. 1 and 2, more than 40 years ago (1841). He wrote.—"La *Perla Ferreri* se trouve dans les environs de Turin; le Musée de Genève en possède deux exemplaires mâles qui faisaient partie de la collection qui lui a été léguée par M. le Chanoine Ferrero."

The species is remarkable from its ample (even in the ♂) blackish wings, nearly wholly black head and thorax, and yellow abdomen, with black tails.

At Geneva, I had the opportunity of seeing the two typical males, which, at present, are not in the Museum, but at the residence of the widow of the late A. Edouard Pictet (son of the describer). But I was not able to make a critical examination.

When in the beautiful Val Anzasca, on the 17th July, I visited the pretty waterfall that descends from below the mountain village of Calasca, and at its foot captured a female *Perla* that is undoubtedly *Ferreri*. It quite agrees with Pictet's description, excepting sexual differences.

The anterior-wings expand to 51 mm. (Pictet gives 41 mm. for the ♂). As structural sexual characters, it should be noticed that the margin of the last dorsal segment is truncate, and that the egg-valve is rather large and semicircular. It was not remarked in Pictet's description that the anterior margin of the wings (costal and sub-costal areas) are *slightly* tinged with greenish in the living insect, but this tinting is a character common to many *Perlidæ*; in this case it chiefly results from the costal and sub-costal nervures, and the costal nervules, being of a paler colour than the rest of the neuration (which is blackish).

Entomology awaits the advent of some one with sufficient courage to attack the *Perlidæ* (even the European species) in a monographic manner. Pictet's work was admirable, as all those who have had occasion to consult it will readily admit; but it requires supplementing in accordance with the experience gained during the more than forty years that have elapsed since its appearance. When I regard my own accumulations of materials in this family (even in European forms), and feel to what a small extent they are arranged and determined, the question constantly recurs to me:—Will a specialist in *Perlidæ* ever appear?

Lewisham: *August*, 1882.

Notes on the larva of Phycis carbonariella.—This species being usually very abundant on the dry heaths in this district, I determined last year, if possible, to work out its history. Therefore, on the 2nd of July, I went up to Crossland Moor, a heath almost close to the town, and, in a very short time, had netted and boxed some thirty imagos, a fair proportion of which were females. Several of them immediately deposited, and the eggs were oval, though rather pointed at the ends, the colour a bright light purple. On the 11th a number of them hatched, and the newly-emerged larvæ were very lively, red with black segmental divisions, and the polished head and frontal plate nearly black. Ling, sallow, &c., were at once supplied, and they soon took to the sallow, quite forsaking the ling and heath, which I suppose must be the natural food, as there is no sallow on the heaths where the moths occur. The red colour was retained until they were about a quarter of an inch long, but after the next moult they became uniformly dull black or brownish-black, the black head and frontal plate only having a polished appearance. I was from home at the time the change took place, so cannot tell exactly on what date the moult was effected. Up to this time, too, they had fed *in* the leaves, eating the inside between the upper and under skins; but after this they spun together two or more leaves, and ate from the outside of the leaf, only, however, the softer parts, leaving the ribs and veins. On July 28th they were three-eighths of an inch long, and, by August 5th, half an inch had been attained, when I took down notes on them as follows:

Body slender, cylindrical, and of nearly uniform width, tapering only slightly towards the anal extremity; head a little narrower than the second segment, rounded, the mandibles prominent; both it and the frontal plate polished; segmental divisions well defined, and from each segment being also divided by a transverse depression the skin has a rather wrinkled appearance; there are a few scattered short hairs.

The colour of almost the whole of the larva is an uniform dull black, showing brownish at the segmental divisions only, though an exceptional larva is entirely of this brown tinge. The black specimens have the ventral surface slightly paler, but there are no other discernible markings of any sort. Altogether it is one of the most unicolorous larvæ I ever saw, and no species on our list is more appropriately named, the larva, imago, and habitat (the burnt charred parts of the heaths), being almost equally black.

For some days the larvæ had been unaccountably disappearing, but how and when I never could make out, as their cage seemed close-fitting enough. By the 16th I had only two or three left, and as these seemed disposed to hibernate, I described the largest again, as follows:

Length, three quarters of an inch, and proportionately stouter than when last described; the segments rather plumper, and the wrinkled appearance of the skin in the earlier stage partly lost. Raised tubercles, too, have now made their appearance, but are not very conspicuous. In other respects the shape is the same. The ground-colour is now a little paler, a distinct, but very dark, olive tint is seen through the dull black, and the alimentary vessel shows as a quite black dorsal line. Head, frontal plate, and tubercles polished, black. There are no other perceptible markings. Ventral surface and prolegs dull dark olive-green, the legs black.

The larvæ fed on the sallow leaves; but one I found had evidently excavated the soft stem, causing the leaves to droop and wither: this was one of the last larvæ I saw, and suggested it was just possible the disappearance of the other larvæ might be accounted for from their having been thrown away unperceived in the old stems, though I can scarcely credit that I overlooked them in such a way.

In the spring I could find none of the two or three hibernated larvæ, so made several journeys to the heath, in order to complete the history of the species; but neither by sweeping nor by close searching could I detect any trace of the larvæ, which, however, may perhaps be accounted for from the fact, that three or four excursions later for imagos only produced three specimens, where the previous year they were in profusion.

As I obtained no more eggs, I think it best to publish this incomplete history, as in the larva three-quarters of an inch in length, there is, I think, little doubt the adult markings had been quite or almost attained.—GEO. T. PORRITT, Huddersfield: *September 2nd*, 1882.

Occurrence of Acrobasis consociella, var. sodalella, in Pembrokeshire.—Early in June last, I found in a wood of stunted oaks, some miles from here, blotched and discoloured bunches of oak leaves, evidently the habitations of larvæ of *Acrobasis consociella.* The larvæ were still feeding, generally but one in each bunch of leaves. They fed up without difficulty, and in July the moths emerged; they prove to differ from ordinary *consociella* in several respects—in the larger size—equalling *suavella,* in the more richly crimson-grey central band, and in the form of the first line on the fore-wings, which bounds the basal pale patch. This line is a variable character in this species. In a German type which I have, and of which the colour is very pale, it is decidedly oblique and very nearly straight, in ordinary English specimens it is more curved and indented, so as to become more perpendicular; this variation in form is still more strongly shown in the specimens that I have lately reared, and the variation seems to culminate in a type received from Professor Zeller of his *Ac. sodalella*—which, however, the Professor is now convinced is only a variety of *consociella*—and in which this line is almost straight across the wing; *sodalella* is larger than ordinary *consociella,* and has the colouring brighter—though, apparently, by no means so bright as in the present specimens; and its markings, though not very distinct, are otherwise accurately the same as theirs.

I am quite of Prof. Zeller's opinion with regard to this form, but it is such a handsome variety of *consociella* as to be well worthy of notice. All my specimens reared here are *large,* but one or two are of the colour of ordinary *consociella,* and one has the left fore-wing of the ordinary colour, and the right of the bright colour of the variety.—CHAS. G. BARRETT, Pembroke: 16*th September,* 1882.

Hermaphrodite specimen of Lasiocampa trifolii.—Early in August I had much pleasure in breeding a fine hermaphrodite specimen of *trifolii.* In the antennæ the difference is most distinct, that of the right hand, or male side, being deeply pectinated, the left, or female, quite plain. In the wings the right hand, or male, side is smaller and a little lighter than the female, with the outer marginal band a little lighter than usual. On the female side the central spot is more, and the outer marginal band less, distinct than in the majority of specimens. On the upper-side the body is equally divided, being a little lighter on the male side that the other. On the under-side, however, the difference in colour on the body is most distinct, the male side being a light buff and the female a deep chocolate; the line dividing the two colours is so distinct that it has the appearance as of two specimens having being cut in two, and the right hand side of the male joined on to the left hand side of the female. The extremity of the abdomen looks decidedly peculiar with the fluffy tail of the male on the right, and the plain roundness of the female on the left.—R. A. Fraser, Seafield, Abbotsford Road, Crosby: *September*, 1882.

A Lepidopterous larva destructive to rice in Panamá.—In a letter lately received from Chiriqui, from Mr. G. C. Champion, he says that immense numbers of a larva had recently appeared suddenly in the rice plantations of the district, and were doing a great deal of mischief, so much so, that for the past week the natives had been holding prayer-meetings nearly every evening on this account, rice being the staple article of food in Chiriqui, far more so than bread in England.

Mr. Champion enclosed a sketch of the larva, and an imago. The larva is very like that of *Hadena pisi* in general appearance, and about the same size when full-grown, it is pale yellowish-white in colour, with two broad, longitudinal black stripes along the back, and a few fine dark longitudinal lines mixed with the yellowish ground-colour.

The pupa is enclosed in a slight silken cocoon between the leaves of the rice, and remains only a few days in this state.—W. W. Fowler, Lincoln: *Sept.*, 1882.

[Mr. Butler informs us that the moth is a species of *Remigia*, Guenée (*Noctuidæ*), near "*Ophiusa delinquens*," Walker, but much darker.—Eds.]

NOTES ON MICRO-LEPIDOPTERA.

Laverna Hellerella and atra distinct species.—In reference to Mr. Douglas' remarks on the distinctness of the two species of *Laverna*, the one from apple shoots feeding in spring and the other from hawthorn berries in autumn, I have no doubt whatever of the fact that they are two species. I have bred both, and neither form varied in the slightest degree, nor were they in any way associated together. *L. Hellerella*, the larvæ of which feed in autumn in hawthorn berries, always emerged with me as the light species, and the one we call *L. atra* from apple always the dark one, and how they could have been confounded I cannot understand.

Gelechia maculiferella bred from Cerastium.—I bred this insect freely last year from a small plant on the sand hills at Lytham, which I believe to be *Cerastium semidecandrum*. The larvæ fed in the flower shoots and seeds, and spun up in sand cocoons.

Gelechia ligulella, vorticella, tæniolella, and Sircomella.—I feel sure that three of these species are only forms of one, viz.: *ligulella, tæniolella, and Sircomella.* I took a large quantity of them this year, and they were swept from *Lotus corniculatus*, different sexes in the different forms being freely paired. This is, I think, a convincing proof of their unity of species. *Vorticella* is also so like the others (the only difference being in the form of the fore-wings, which may be a variation from local reasons), that I should place it also as a form. If any one takes *vorticella* freely, and would kindly allow me to inspect a series, I should thank him much and return them uninjured.

Nepticula betulicola.—Last year, when breeding *Nepticula betulicola*, I thought that another species was emerging with them from similar larvæ, but on a more extended trial this year, I found that the two sexes differ considerably, and thus my doubts were solved. *Betulicola* males are rather smaller and browner; frequently the fascia does not extend quite to the costa, and the head is fuscous with white eye caps. *Betulicola* females are purplish from the base to the fascia, which extends quite to the costa, and the head is yellow. This insect varies in intensity of colour with the temperature and climatic conditions of the season. Some years ago in a hot summer I bred some as brilliant as *alnetella*.

Nepticula regiella bred.—I had last autumn collected considerable quantities of yellow larvæ blotching whitethorn, in order to find out the larva of *Nepticula ignobilella*, which I am at present unable to separate from that of *gratiosella*. The result was that I bred this May plenty of *gratiosella*, none of *ignobilella*, and one *regiella*, in the room. As I had larvæ from Witherslack and Preston (viz.: from limestone and sandstone), I am unable to determine the district from which it came, but hope to do so this year. I have previously bred *ignobilella* from one of the localities, and it is very curious that none turned up this year. The *Nepticulæ* that frequent hawthorn on limestone appear to be *pygmæella*, *oxyacanthella*, and *atricollis*. Those on sandstone *pygmæella*, *oxyacanthella*, *gratiosella*, and *ignobilella*.

Species new to the Witherslack list.—I took a single specimen of *Retinia duplana* flying among fir trees this year; it is a very distinct species, and has only, I believe, been before taken in Scotland in very small numbers.

Depressaria hypericella has been bred this year from shoots of *Hypericum*, by both Mr. Shuttleworth and Mr. Murray. It had not previously been noticed in the district.

Some time ago Mr. Sang took a specimen of *Œcophora minutella*, and this year I was fortunate in doing the same. It was flying, near dusk, across a road near farm buildings.

In August I first found larvæ of *Asychna terminella* mining in the leaves of *Circæa lutetiana* in dark places in the woods.

In September, last year, I found and recognised mines of *Nepticula prunetorum* in sloe. I had before seen this larva but had stupidly mistaken it for *Nepticula plagicolella*. I now see that the latter is yellow and makes a clear whitish blotch preceded by a slender gallery: the former is green and its mine is coiled like a watch spring, afterwards extending round the edge of the leaf. The "frass" fills up the gallery and makes it light brown. The imagos emerged very freely in June.

About August, I found mines, which appeared strange to me, in wild strawberry, these produced in June *Nepticula arcuosella*. The other mines found in wild strawberry produced *Nepticula aurella*, at least, I cannot separate the two insects at present.

Amongst alder bushes in a swamp, in August, I came upon reddish mines tenanted by reddish larvæ, which were suspected to be *Nepticula alnetella*. In the latter part of June these emerged, *N. glutinosæ*.—I. H. **Threlfall**, Preston: *September 13th*, 1882.

Habits and description of the larva of Chelaria conscriptella.—Whilst examining a birch tree in the latter part of last June for larvæ, which seem, upon the whole, to have been extremely scarce this year, my wife observed that the young leaves on one of the shoots were rolled up and partially eaten; and in the youngest leaf that was so attacked we found a small pinkish-brown larva, with a black head and second segment. On further examination, we detected several other shoots eaten in the same manner, the larvæ from which have produced *Chelaria conscriptella*.

The larva rolls up a leaf longitudinally and eats about half of it, sometimes also eating a little from a neighbouring leaf. It then proceeds to the next leaf nearer to the tip of the shoot, as if the leaf it had left had become too old and hard for its jaws, and treats it in the same manner. In some cases I have found it rolled up in one of the very small leaves only about a quarter developed, close to the very tip of the shoot. When full fed it spins a slight cocoon, and turns to a pupa of a light brown colour, and thickly covered with short hairs like the pile of velvet, except between the segments. The moths began to emerge on the 29th of July. I have also bred this species from bramble.

I append a description of the larva:

Length, 4½ lines. Head black, rough like morocco leather, and shining; 2nd segment with a black plate above like the head, with slight indications of a pale dorsal line, and a small triangular black plate on each side. The general colour of the body is a brownish-pink, of which the shade varies considerably in different individuals. The pink predominates in the central portions of each segment on the back and upper parts of the sides; the portions between the segments and the under parts of the body have a light brownish tinge, with a very faint trace of the pink colour. The usual spots are small and black, and generally very inconspicuous. The hairs emitted by them have mostly a brownish tinge, those on the back being darker, sometimes quite black, and two at the anus, as well as a few on the sides of the front segments, are blackish with light-coloured rings. The legs are almost black, but the light ground-colour shows rather conspicuously between their segments; the claspers are of the light brown ground-colour, tinged with pink on the outsides, the rings of hooks at the feet being darker brown; the spiracles are inconspicuously edged with black.—**Nelson** M. **Richardson**, Llangennech Park, R. S. O., Carmarthenshire: *August 19th*, 1882.

[The notice of the *habits* of this larva given above is extremely interesting. Madame Lienig's description (Isis, 1846, p. 292) says nothing of the habits; she gives the same food-plant, *birch*, but she describes the young larva as white, with hardly a tinge of greenish, and the more adult larva as dull whitish. It is not till *some time before pupation* that she says it is reddish-brown, with white incisions of the segments.

Since Madame Lienig's time no one seems to have met with the larva, but various food-plants have been assigned to it, from the imago frequenting certain trees or bushes. If its occurrence on bramble should be confirmed, it would support the conjecture of von Nolcken that "probably the larva feeds on several kinds of leaf-trees."—H. T. S.]

Peronea perplexana and Eupœcilia Mussehliana in Carmarthenshire.—Amongst some insects which Mr. C. G. Barrett was kind enough to name for me lately, were specimens of *Peronea perplexana* (Ent. Mo. Mag., vol. xvii, p. 264) and *Eupœcilia Mussehliana* (Ent. Mo. Mag., vol. xv, p. 39). The former species I have taken in this neighbourhood several times in the last two or three years, but have not known exactly to what to refer it: this year I have bred it during the last week of July and the first week of August from larvæ spinning up the leaves of both mountain-ash and bramble. The imago occurs here occasionally in company with *P. comparana* and *Schalleriana*, and I have taken it generally by beating hedges of very mixed growth, such as sallow, hawthorn, oak, hornbeam, privet, birch, beech, bramble, &c., in the autumn.

Of *Eupœcilia Mussehliana* I have taken two specimens here this year amongst mixed herbage, so that I can form no opinion as to the food of the larva.—Id.: *September* 13*th*, 1882.

Hemiptera at Hurst Green, Sussex.—For three weeks in August, I had some collecting in the neighbourhood of Hurst Green, a small village in East Sussex, about 14 miles from Hastings. The following are the principal results:—

Sehirus biguttatus, in all stages, in moss at roots of *Calluna*. This is by far the commonest of the genus in East Sussex. *Stygnocoris rusticus*, common at roots of grass, &c.; *Dictyonota strichnocera*, rather common on furze; *Megaloceræa longicornis*, common on *Brachypodium sylvaticum*, the spikelets of which it so closely resembles that its detection is rendered difficult; *Leptopterna dolabrata*, ♀, developed; *Miridius quadrivirgatus*, a few by sweeping; *Hadrodema pinastri*, not uncommon on Scotch Firs; *Globiceps selectus*, by sweeping and at roots; *Dicyphus pallicornis*, on foxgloves: *Heterocordylus unicolor* and *Orthocephalus coriaceus*, by sweeping; *Macrocoleus molliculus*, common on *Achillea millefolium*; this is another species difficult to detect *in situ*, I found it on the under-side of the flowers, the involucres of which it closely simulates, the dark markings on the elytra corresponding to the scarious edges of the involucral bracts; *M. solitarius*, on *Stachys* by sweeping; *Amblytylus affinis*, by sweeping; *Atractotomus magnicornis*, not uncommon on Scotch and Spruce Firs; *Microphysa pselaphiformis* and *elegantula*, ♀, on trunks of various trees; *Acompocoris alpinus*, a few on Scotch Firs; *Ceratocombus coleoptratus*, in moss at roots of *Calluna*.

In Eridge Park, near Tunbridge Wells, I found *Chlamydatus caricis* on rushes, and at Frant *Salda Cocksii*, in *Sphagnum*.

Eupteryx vittatus.—Since writing the note on this species, which appeared on page 89 in the last No. of this Magazine, I have found the insect in the same stages on *Ranunculus repens* frequently, and occasionally on some other low plants.

Spiders and bugs.—Spiders of the family *Thomisidæ* appear to be partial to bugs as an article of diet. When searching at roots of plants, I have often come upon them scuttling off with their prey in their falces, and not unfrequently they occur in the same way in the sweeping net, either having been surprised in the act and still unwilling to relinquish their chances of a dinner, or having taken advantage of the abundant supply of provision furnished in the heterogeneous contents of the net. One I remember to have seen bravely struggling with a refractory *Miris* larva, and another had a charming *Chlorita viridula* locked in its deadly embrace.—E. A. BUTLER, University Lower School, Hastings: *September* 11*th*, 1882.

Parasites on Homoptera.—Collectors of *Homoptera* must occasionally have observed black objects projecting from the bodies of these insects. As far as my experience goes, they are scarce, except on the *Typhlocybidæ*, but on some species of them they are common, each individual, however, having but one parasitic appendage. This is in the form of a long, sub-ovoid sac, very large in proportion to the size of the body of the foster-insect, protruding from between two of the segments of the abdomen, and tightly affixed at one end, otherwise free; the contour of the body being much distorted by the intruder, and it has been observed that the victims are always females. Curtis says of his *Aphrodes craticula* (= *Athysanus subfusculus*, Fall., *sec.* Puton): "It is infested in the different stages with a large black parasite attached to the sides of the thorax" (B. E., p. 633, 12), but I have not seen any parasites so located. I have often been asked if these apodal bodies were acaroid, but although I had made many enquiries I had not been able to obtain any satisfactory information as to their nature. Now, however, a light is thrown upon the subject by Herr Josef Mik, who, in one of the most interesting biological articles I have seen for a long time, published in the current number of the "Wiener entomologische Zeitung," page 215, demonstrates from actual experiment that one of this kind of parasite found on *Deltocephalus xanthoneurus*, Fieb., in September, became detached, fell to the ground, and produced in the next June a ♀ *Gonatopus pilosus*, Thoms. (Hymenopt. Proctotrupidæ). The details of the history (wanting some points as to the time and manner of deposition of the egg and the hibernation of the parasites under natural conditions) are fully given, together with descriptions and figures showing the *Gonatopus* in its various stages of life. We have thus a guide to investigations in this curious and hitherto obscure subject; what if all the species of *Gonatopus*, of which there are several in Britain, be parasitic on *Homoptera*?

It appears, by a foot-note, that *Gonatopus pedestris*, Dalm., was recorded in 1857, as having been reared by the late M. Edouard Perris from *Athysanus maritimus*, Perr. (Gen. *Thamnotettix*, *sec.* Puton), but this in no way detracts from Herr Mik's discovery, for the fact only became known to him subsequently.—J. W. DOUGLAS, 8, Beaufort Gardens, Lewisham: 11*th September*, 1882.

Parasites on Homoptera.—I once found a parasite on *Iassus subfusculus*, and I have met with it again on *Acocephalus agrestis*. This latter I kept for some time alive, and fed it on grasses, &c. The parasite at length burst open the black case, which appears to be the hardened skin of the larva, still attached to the host. It opened into two equal parts, and allowed the pupa to drop out, in which state it still remains, and I hope I shall be able to rear it to perfection. The host had become completely exhausted by the time the parasite was full-fed, and died when the pupa dropped out.—Edward Parfitt, Exeter: *September 14th*, 1882.

Calyptonotus lynceus at the Camber Sandhills.—On August 7th, I took this local Hemipteron at the above locality, accompanied by *Rhyparochromus prætextatus* and *Coranus* (1). A developed specimen of *Acalypta parvula* has been also found there.—Edw. P. Collett, St. Leonard's-on-Sea: *September*, 1882.

Ammœcius brevis at Matlock.—At the end of July, last, I found a single specimen of *Ammœcius brevis* in a sandy bank of the Derwent, at Matlock. I did not recognise it at the time, the resemblance of this beetle to an *Aphodius* having thrown me off the scent, or probably more specimens might have been secured.—W. G. Blatch, 214, Green Lane, Smallheath, Birmingham: *September 18th*, 1882.

Chrysopa minima, Kiljander, = Ch. dasyptera, McLach.—In the "Meddelanden af Societas pro Fauna et Flora Fennica," Häftet 7, pp. 152—156 (1881), is a useful paper by Ludvig Kiljander, intituled, "Bidrag till kännedom om Finlands *Neuroptera Planipennia*," in which is a description of "*Chrysopa minima, nov. sp.*" (p. 154). A type and several other examples of this are before me in a case just received from Finland.

I find that the species is identical with that described by me in 1872 as *Ch. dasyptera*, from two examples, one from South Russia, the other from Samarcand. The description first appeared in the "Nachrichten der Liebhaber der Naturkunde, &c., in Moscow" (I refrain from giving the Russian title), x, p. 123, and almost simultaneously in the "Bulletin de la Soc. Imp. des Naturalistes de Moscou," xlvi, p. 193; subsequently it was reproduced in the "*Neuroptera* of Fedtschenko's Travels in Turkestan" (1875), p. 19. One original type of *Ch. dasyptera* is in my collection, and it agrees perfectly with that of *Ch. minima*, save that (as is usual in *Chrysopa*) the green coloration has nearly disappeared, and I should scarcely now use the term "*viridi-flava*" that headed my original description, whereas an unqualified "*viridis*" would be more applicable to the recent examples from Finland. As I previously remarked, it is allied to *Ch. phyllochroma* (with which it agrees in its simple tarsal claws), but it can scarcely be a pigmy condition of that species. Possibly it is the smallest true *Chrysopa* that is known, but its broad-oval densely hairy (on the neuration and margins) wings render it conspicuous.—R. McLachlan, Lewisham: *4th September*, 1882.

P.S.—In the same paper (p. 153) Herr Kiljander remarks concerning *Myrmeleon formicarius*, L. (*formicalynx*, Burm.), "Förekommer i Skandinavien, *England*, och Österrike." The citation "England" is erroneous. No *Myrmeleon* occurs in the British Isles. Otherwise, the species in question is probably spread over the whole of Europe, and through Siberia to North China and Japan.—R. McL.

Garden-insects in 1882.—My out-door entomology this year having been restricted to the precincts of the garden, I can corroborate, so far as the experience within that area goes, the reports from the hunting grounds of the general dearth of insects. In my case, the scarcity from the point of view gardenesque (to use a term of the late J. C. Loudon), has been beneficial; but from the point entomological disadvantageous, as may be gathered from the following notes. These may also serve to show how an entomological biped has been temporarily affected by his environment (which is the latest, and not always appropriate, orthodox term to express conditions of life); but as to the conditioned hexapods, the contributory factors to their latest appearance, or non-appearance, must, in many cases, be sought in the fluctuating or conflicting agencies in more than one preceding generation, and then, perhaps, be found only hypothetically, on the assumption of *post hoc propter hoc*.

The early broods of *Pieris* had scarcely one representative; and in the late broods the numbers were far less than usual; consequently, the cabbages, which are ordinarily consumed by the larvæ, fairly escaped from the slight attacks of these enemies, and have taken heart. Not another butterfly of any kind has paid a flying visit.

Abraxas grossulariata, that in some years is the currant-pest, leaving not a leaf on the bushes, has not been visible in any form or condition this year.

Of *Orgyia antiqua*, that usually dances in and over the garden by dozens at a time, only a solitary one has now and then been seen practising its mazy figures.

Plusia gamma, that sometimes *will* be noticed, has this year had to be looked for, and I can just say that I have seen it.

Hepialus sylvinus, *Crambus pratellus*, and *C. tristellus*, that are usually common, and sacrifice themselves on the house-lights, have scarcely appeared.

Hyponomeuta padella began the season, as larvæ, well, and in some quantity, but I fear that my personal intervention with their way of life contributed, to a great extent, to rendering their course futile, and hindered the survival of the fittest.

Nematus ribesii, that is the usual rival or assistant of *Abraxas* in the devastation of the currant and gooseberry bushes, came not in the first instance, but later a few appeared and made their mark.

The white wool of *Schizoneura lanigera* profusely decorated the branches and shoots of all the apple-trees, save one that is never visited by this pest, up to the end of July; when, as if by a stroke of harlequin's wand, a transformation scene was effected: all disappeared and the foliage became revived and vigorous. From this recovery, however, one old tree was excepted: for three successive years it has struggled against the Aphidian foe, and has been reduced to a deplorable state of vital condition, and, now, almost leafless, it seems as if it would not survive, although for five or six weeks there have been no *Aphides* on it; its stem and branches are covered with the scales of *Mytilaspis pomorum*, which are so close together that they jostle each other for place. On this tree, in former years, I used to get *Gelechia nanella*, but I no longer find any examples nor see the pupa-skins sticking out of the bark. *Aphides* on other plants or trees have been scarce: the scanty glow of the pseudo-summer's sun on still evenings has not been peopled by floating swarms, nor has there been the agreeable spectacle of hundreds of these malefactors hung in the chains of the spiders, only tiny vagrant *Diptera* having been thus executed. The *Coccinellæ* might well have been starved if the *Aphides* on the hops had not come in thousands to their relief; thereon the lady-birds feasted to repletion.

No *Aleurodes* has yet been visible on cabbage, strawberry, honeysuckle, or other plants. I cultivated some plants of *Chelidonium majus*, on which *A. proletella* is reputed to swarm, but without the good fortune to have enticed any of this desideratum to come into my garden.

A brood of *Capsus laniarius* took possession of a clump of raspberry-plants; in fact they were born and bred there, and mostly remained, but some of them acted the parts of pilgrim fathers and mothers, and went out not knowing whither, coming to grief, for their carcasses fell by the way. There were also a good many of *Scymnus minimus* on the raspberry plants.

Pilophorus perplexus, usually common, was this season a rarity.

Typhlocybidæ, of which in general some species, such as *T. rosæ* and *T. quercûs*, swarm, have been very scarce.

In August, a *Thrips* devastated the flowers of Phloxes, and, in a less degree, of the *Convolvulus minor*: examples are reserved for Mr. Pergande. Strange to say, I have seen no other *Thysanoptera*.

Rhizotrogus solstitialis, that ordinarily dances in swarms around the tops of the trees on July evenings, came not then; in the middle of August, two or three of the belated creatures appeared on the scene and staggered through their performances alone.

Lucanus cervus kept not his annual appointment.

Sitones lineatus, that ordinarily comes in numbers before the sparrows dare to take the green peas for their booty, did not appear at all, although for several consecutive years peas have been grown on the same ground. Yet, these destroyers might as well have come and have had their share, for their abstention only left the more for the sparrows, which were still not content, but encroached on my proportion. The conditions of life of the said sparrows have certainly been favourable, for there are twice as many of them as there were a year ago.

Some casual visitors—pioneers or lost wanderers, I know not—called, and, having had their external communications cut off, were domiciled under glass. These were: *Derephysia foliacea*, usually a humble dweller, found ten feet up a cherry tree; *Myrmedonia limbata*, *Xestobium tessellatum*, and *Oxyomus porcatus*—one of each—alighted on the white stones under the verandah, attracted probably by the colour.

Of some regular *habitués* I have previously taken note at pages 67, 88, and 91; others I pass over.—J. W. DOUGLAS, 8, Beaufort Gardens, Lewisham: *September 8th*, 1882.

ENTOMOLOGICAL SOCIETY OF LONDON.—*July 5th*, 1882: H. T. STAINTON, Esq. F.R.S., &c., President, in the Chair.

Herr Carl Berg, of the Museo Publico, Buenos-Ayres, was elected a Foreign Member.

Mons. Jules Lichtenstein exhibited, through Sir Sidney Saunders, specimens of *Cerataphis lataniæ*, and communicated some remarks thereon, promising to forward further notes on a future occasion.

Miss Ormerod exhibited *Sitones puncticollis*, bred from larvæ taken off the roots of clover near Chelmsford; these larvæ began to change to the pupal condition about the 23rd of May, and one developed at the end of that month, six weeks after the receipt of the larvæ. In the same locality where these larvæ were taken the pupæ were found in some numbers in June at the roots of the clover. Miss Ormerod remarked that the larvæ were particularly sensitive to damp.

Mr. E. A. Fitch exhibited two ichneumons parasitic on spiders, and read a note from the Rev. T. A. Marshall respecting the first, pointing out that the spider on which the larva was parasitic was a species of a bright green colour, and that the larva that fed upon it gradually turned green itself. Mr. Fitch thought the second species was probably a *Polysphincta,* and he read a communication from Mr. Bignell respecting its larva, and showed a figure of it. He also remarked that De Geer had noticed a larva that was parasitic on a spider. He also exhibited a new species of *Proctrotrupidæ* from the Rev. T. A. Marshall, taken in Rothen Wood in company with *Anommatus* 12-*striatus,* four to six feet under ground.

Miss Ormerod showed specimens of very young pine trees, whose stems had been stripped of their lower leaves by chafer-grubs, and remarked that she had often heard that the pines were damaged in this way in Canada, but that this was the first case in England that had come under her notice.

Mr. C. O. Waterhouse exhibited a species of *Ephemeridæ* from Ceylon, on behalf of Mr. G. Lewis, who said it was luminous. The Rev. A. E. Eaton stated that it was a species of *Teloganodes* (probably *T. tristis,* Hag.); and that there was a remark in the Transactions, by Dr. Hagen, concerning a British species of *Cœnis,* which was said to be faintly luminous. According to Mr. Lewis, the whole abdomen in his insect appeared to be luminous.

Mr. Miskin communicated a paper on the habits of *Ogyris Genoveva,* Hewits.

Lord Walsingham sent a paper on North American *Coleophoræ.*

Mr. Scott communicated a paper on certain genera and species of *Psyllidæ* in the British Museum.

August 2nd, 1882: F. D. Godman, Esq., F.R.S., Vice-President, in the Chair.

Mr. Hildebrand Ramsden, of 26, Upper Bedford Place, W.C., was elected a Member of the Society.

Mr. F. Enock exhibited male and female specimens of *Macropis labiata,* which he had captured at Woking.

Mr. Billups exhibited specimens of *Paragus tibialis,* Fallen, which he had found in June last in the burrows of *Halictus nitidiusculus,* and also a specimen of *Discomyza incurva,* Fallen, captured at Box Hill; this insect was unrecorded as British.

Miss E. A. Ormerod read some Observations on the development of *Sitones lineatus.*

Mr. Distant exhibited a number of specimens of *Xyleborus Saxeseni,* Ratz., a species which had occasioned the destruction of beer sent out to Rangoon, presumably by boring through the casks.

Mr. Olliff exhibited specimens of *Anommatus* 12-*striatus,* Müll., captured at Tunbridge by Mr. A. C. Horner.

Mr. G. Lewis contributed a paper entitled—On a visit to Ceylon, and the relation of Ceylonese beetles to the vegetation there.

Mr. H. Pryer communicated a short memoir—On certain temperature-forms of Japanese butterflies.

Mr. C. O. Waterhouse read—Descriptions of new *Coleoptera* from Madagascar belonging to the *Melolonthidæ.*

NOTES ON NEW BRITISH *COLEOPTERA* SINCE 1871; WITH NOTICES OF DOUBTFUL SPECIES, AND OF OTHERS THAT REQUIRE TO BE OMITTED FROM THE BRITISH LIST.

BY THE REV. W. W. FOWLER, M.A., F.L.S.

Since the Entomologist's Annual ceased to be published in 1874, no collected notice, with descriptions, of the species of *Coleoptera* that have been added to the British list has appeared; the species, too, that were described in the "Annual," after the publication of Dr. Sharp's catalogue in 1871, have, in many cases, escaped the notice of collectors, who have used the catalogue for labelling their cabinets: it is hoped, therefore, that these notes may be of interest to the many new collectors who are taking up the study of *Coleoptera*. I have had a great part of them written out for a considerable time, and have found them of the greatest use for private reference; they have been perused by several well-known Entomologists, to whom I am much indebted for alterations and suggestions, and I feel very great pleasure in publishing them in a revised form. I have adopted the classification of Dr. Sharp's catalogue, which is in the hands of most collectors; this catalogue is, however, now out of print, and a new list is much required. Dr. Sharp has been, and still is, so much occupied with foreign groups, that he is unable to give the requisite time for bringing out another edition. The Rev. A. Matthews and myself have been, for some time past, engaged upon a fresh catalogue, which we hope soon to publish; considerable alteration in classification will, in parts, have to be made, to bring the work at all up to a level with the results of modern research, but, by adopting, with but few exceptions, the old nomenclature, which has been so unreasonably upset in the last edition of the European catalogue, and by avoiding unnecessary changes, we hope to avert confusion as much as possible.

In the ensuing notes references to authorities are given wherever it is possible; as, however, they are not intended to be in every case conclusive, but merely as notes and hints to collectors, additions and changes that have, by common consent, come to be considered necessary, have been mentioned, in the hope that in any doubtful case some person may be induced to prove or disprove the statement.

GEODEPHAGA.

***Notiophilus* 4-*punctatus*,** Dejean.

It is doubtful whether this species should be retained as distinct, or be merely considered a variety of *N. biguttatus*, Fab.; as Crotch first pointed out, it is some-

times *biguttatus* on one side, and 4-*punctatus* on the other, which appears conclusive. Dawson (Geod. Brit., p. 57) says, that it is probably only an uncommon variety of *N. semipunctatus*, Fab., of which he makes *N. biguttatus* a variety. I have specimens from the south of England which show no structural difference from *N. biguttatus* worth mentioning; the striæ, however, on the forehead appear to be more numerous and finer than in this latter species.

Carabus auratus, L.

The specimens of this insect that from time to time are captured in this country, seem to be always taken in situations or localities that make it almost certain they have either flown across the channel, or been imported with vegetables, &c.

CARABUS CANCELLATUS, Ill.

This species has been alternately inserted in and omitted from the list. Dr. Power tells me that there are certainly two or three well authenticated specimens, and that he thinks one has been taken within the last two or three years; among some notes from Mr. Mason relating to Mr. Rye's collection, I find this insect mentioned as one that ought to be re-instated.

Carabus convexus, Fab.

The only specimen of this insect that seems to have any good claims to authenticity is in the collection of the Rev. A. Matthews, and this rests on rather circumstantial evidence.

Calosoma sycophanta, L.

This species is almost certainly not indigenous; it is only an occasional visitant from the continent.

Dyschirius obscurus, Gyll.

I have never seen this species. Dr. Power says that he believes it rests on one specimen, which he always thought was a varying specimen of some other species, and he advises its omission from the list. Dawson (Geod. Brit., p. 29) says, that M. Putzeys had informed him that M. Reiche had a specimen which was captured in England, and that Mr. Haliday had told him he had captured it on the shores of Lough Neagh. In Ent. Ann., 1858, 51, he alters his description, as given in the Geodephaga Britannica, saying, that he was now able to describe it from actual types before him; he does not, however, say whether these types were British or foreign examples.

Brachinus explodens, Duft.

This appears to be a doubtful species; the whole question will be found discussed at length Ent. Ann., 1866, 58.

DROMIUS VECTENSIS, Rye.

This species is closely allied to *D. sigma*, Rossi, but is distinguished by its shorter and stouter antennæ, wider head, and more transverse thorax, and wider and comparatively shorter elytra; the shape of the fasciæ on the elytra also serves to distinguish it. It frequents the sea coast, especially in the Isle of Wight, whereas *D. sigma* is a fen insect (Ent. Mo. Mag., x, 73; Ent. Ann., 74, 76).

Dromius oblitus, Boield.

This species is synonymous with *D. nigriventris*, Thoms. (*D. fasciatus*, Dej.), but the *D. oblitus* of Dr. Sharp's catalogue must be referred to *D. vectensis*, and must, therefore, be erased from the British List, the latter name being substituted.

Lebia turcica, Fab.

There appears to be no really authentic example of this species extant as British; it is better, therefore, to omit it from the list.

Lebia hæmorrhoidalis, Fab.

This species is said to have been once taken by Mr. Hope near Netley, Shropshire. Dr. Power possesses a specimen, concerning which he writes as follows: "My specimen was taken in a field at Devizes, and set by Mr. Sidebotham himself. I have an accurate description of the spot, and do not feel any doubt as to accuracy; it is an out-of-the-way place, and there is no reason to think it accidentally imported, as would be the case at the Crystal Palace or its neighbourhood. If you strike it out, I shall say you are wrong."

Amara fusca, Dej.

Our examples of this species must be referred to *A. ingenua*, Duft. The species, therefore, must be omitted.

AMARA CONTINUA, Thoms.

This species has been separated by Thomson from *A. communis* as new. It comes between *A. lunicollis* and *A. communis*, having the build of the former insect, and also (like *lunicollis*) having the marginal row of punctures on the elytra continuous. It has, however, three joints at the base of the antennæ testaceous, whereas *A. lunicollis* has but two. In *A. communis* the marginal row of large punctures is interrupted (Ent. Mo. Mag., xi, 207).

SCYBALICUS OBLONGIUSCULUS, Dej.

This insect, for which Schaum made the genus *Apatelus*, and which now, with one other species, forms his genus *Scybalicus*, has also been classed with the true *Harpali*. It certainly comes very near the *Ophonus* section of the genus *Harpalus*, and forms a good transition from them to *Harpalus ruficornis* and the allied species; it is about the size of *H. ruficornis*, to which its striking yellowish pubescence gives it, at first sight, a superficial resemblance; this pubescence, together with the shape of the thorax (which is much constricted behind, with the posterior angles very obtuse and almost rounded, and the base nearly straight), will serve to distinguish it. This great addition to our list was discovered by Mr. Harris, of Burton-on-Trent, in 1878, who took one example near Weymouth. Mr. Mason took several specimens in 1879. Mr. J. J. Walker took one immature example about the same time; and it has quite lately been found by the Rev. O. Pickard-Cambridge (Ent. Mo. Mag., xv, 203; Entomologist, xv, 238).

Harpalus obscurus, Fab.

This insect has been a great source of confusion to British Entomologists, in great measure owing to the fact that the *Harpalus obscurus* of Dawson's Geod.

Brit. is really the common *Harpalus rotundicollis*, Fair. Fabricius's *Harpalus obscurus* comes very near *Harpalus sabulicola*, Panz., and is the same as the *Ophonus stictus* of Stephens. Dr. Power tells me that when the name *rotundicollis* was substituted for *obscurus* by Mr. Crotch and others, the name *obscurus* was still retained for an insect which was only obtained by himself and others near Swaffham (Cambridge); it was, he says, a very distinct thing, but it was evidently nearer *H. sabulicola* than *H. rotundicollis*, as both he and Professor Babington distributed it as the former species.

HARPALUS DIFFINIS, Dej.

This insect appears very closely related to *H. rotundicollis*, Fairm.; the latter insect is only distinguished by having the sides of the thorax more strongly rounded and the apex of the elytra more distinctly sinuate (Insecten Deutschlands, i, 574). *H. diffinis* is certainly found in England; it is a question, however, whether it is really a distinct species; still, it seems to be considered distinct on the continent, and can hardly be omitted from our list.

Harpalus cordatus, Duft., *H. rupicola*, Sturm., *H. puncticollis*, Payk., *H. rufibarbis*, Fab. (*cribellum*, Daws.), *H. parallelus*, Dej.

These species of *Harpalus* require a careful revision: in Mr. Rye's collection there is a distinct species, apparently near *H. cordatus*. *H. parallelus* appears to be a doubtful species, and to be at best a variety. The two species that precede it seem occasionally to be hard to distinguish. I have, however, taken a large number (over 100) of *Harpalus rufibarbis* in one spot, and found the shape of the thorax very constant.

HARPALUS GRISEUS, Panz.

This species, which is considered by Dr. Sharp to be merely a variety of *H. ruficornis*, appears to be generally regarded as distinct on the continent; it is described by Dr. Schaum (Insecten Deutschlands, i, 584) as very near *H. ruficornis*, but considerably smaller. The thorax is only punctured at the base, the hind angles are, as in *H. ruficornis*, nearly right angles, but not so sharp as in that species. The elytra are scarcely sinuate at the apex, whereas, in *H. ruficornis*, they are distinctly sinuate. If these differences are constant, the form would certainly have specific value. I have, however, a specimen from the New Forest which, at first sight, looks very different to *H. ruficornis*, chiefly owing to size, but, on closer examination, it is extremely hard to make out the distinctions.

Harpalus sulphuripes, Germ.

The British exponents of this species appear to belong to other allied species; it must, therefore, be erased from the list.

Harpalus luteicornis, Duft.

The same remarks apply to this species as to the preceding. Mr. E. Saunders possesses examples of both species (named by authorities), but he tells me that he feels sure that they need not be regarded as having specific value. The claims of this species to be indigenous have been quite demolished by Mr. Rye. Ent. Mo. Mag., x, 229.

Harpalus latus, var. METALLESCENS, Rye.

This curious variety of *H. latus*, with metallic instead of black elytra, was discovered and introduced by Mr. Rye (Ent. Mo. Mag., xi, 84).

HARPALUS 4-PUNCTATUS, Dej.

This insect is very like *H. latus*, but larger and more parallel, with bluish reflection; the thorax, too, is not furnished with the testaceous edge so evident in *H. latus*; on the apical half of the third interstice of each elytron are two or three large punctures. Taken at Braemar by Mr. Blackburn and Mr. Champion, and by several collectors since; it has also occurred in Ireland (Ent. Ann., 1874, 78; Ent. Mo. Mag., x, 68).

Acupalpus derelictus, Daws.

There has been a great deal of discussion over this insect, which has been regarded as merely a dark variety of *A. dorsalis*; it would, however, seem that the unique example taken by Mr. F. Smith near London, from which Mr. Dawson described the insect, is quite distinct, but that dark specimens of *A. dorsalis* have passed for the species in collections (Ent. Ann., 1860, 125; 1866, 61).

Acupalpus brunnipes, Sturm.

It seems doubtful whether Sturm's insect is a distinct species from *A. dorsalis* (Ent. Ann., 1866, 47).

Tachys quadrisignatus. Duft.

This appears to be rather a doubtful species, as it rests on a single example taken by Mr. Bold near Newcastle, which may probably turn out to be only a light variety of *T. bistriatus*, Duft. (Ent. Ann., 1866, 61; Ent. Mo. Mag., xix, 68).

Bembidium lampros, v. velox, Er.

This variety has been made into a new species by Thomson, under the name of *B. 14-striatum*; each elytron has seven striæ instead of six like the normal form; there are, too, a few other slight differences, but, on the whole, it would appear best to leave it still as a variety (Ent. Ann., 1874, 80).

HYDRADEPHAGA.

Haliplus varius, Nicolai.

This insect cannot possibly be retained as a separate species; it seems, however, doubtful whether it is to be considered as a variety of *H. confinis*, Steph. (*H. lineatus*, Aubé), or whether it is to be considered a variety of *H. obliquus*, Fab. I do not possess the insect, but have seen it in Dr. Power's collection, and certainly thought that it looked extremely like a light variety of *H. obliquus*. Erichson and Aubé considered it a variety of this species. There is, moreover, a doubt whether Mr. Bold's insects, on which the species was introduced into our lists, are really referable to *Haliplus varius*, Nicolai (Ent. Ann., 1869, 14; Ent. Mo. Mag., iv, 284).

Hydroporus incognitus, Sharp.

It is a question whether this is synonymous with *H. vagepictus*, Fairm.; it comes very near *H. palustris*, of which species it has been considered a variety, but its larger form, and far less parallel elytra, which are considerably widened behind the middle, must give it rank as a separate species.

ILYBIUS ÆNESCENS, Thoms.

This species must be introduced into the British list, but whether it is to stand as separate, or whether all our specimens of *I. angustior*, Gyll., are to be referred to it, seems open to question. The two species are very closely allied, but *I. ænescens* is rather smaller, with less metallic reflections, and has its antennæ uniformly ferruginous instead of pitchy at the apex; my representatives of the two species are certainly identical, and answer the description of *I. ænescens* (Ent. Ann., 1873, 22; Ent. Mo. Mag., ix, 36).

Gyrinus caspius, Men.

This seems to be a very doubtful species, and it would seem that there is very little difference between *G. opacus*, Sahl., and *G. marinus*, Gyll., as species.

(*To be continued*).

NATURAL HISTORY OF *PIONEA STRAMENTALIS*.

BY WILLIAM BUCKLER.

In the first part of a "Calendrier du Micro-Lépidoptériste," by M. Camille Jourdheuille, published in the volume for 1869 of the "Annales de la Société Entomologique de France," at p. 540, under the heading for March we read—"*Botys stramentalis*, Hb. Dans les tiges de blé: quelquefois tres nuisible." This has been cited by Dr. E. Hofmann in his "Kleinschmetterlingsraupen," and also more recently by Mons. E. L. Ragonot, in Vol. xvi, p. 154 of this Magazine, where he tells us, "It has been stated that the larva feeds in March, in stems of wheat, and that it is sometimes injurious to crops."

Now, in what follows, I think I shall be able to dispose effectually of the foregoing misconception of *stramentalis*, by showing that the larva is not at all an internal feeder, or to be found in March, and is quite innocent of attacking any cereal crop.

On the 27th of July, 1881, I had the pleasure to receive from Mr. Wm. R. Jeffrey a numerous batch of eggs laid by some female moths of this species he and his son had captured, and imprisoned with a variety of leaves of plants that grew where the insects were flying.

The eggs were first observed on the 24th of the month, to be laid on leaves of *Lotus major*, *Glechoma hederacea*, *Barbarea vulgaris* and seed pod, *Myosotis cæspitosa* and *Phalaris arundinacea*, scattered in little flat masses; the largest number in any mass amounted to thirteen, others ranged from three to five, six, seven, and eight, overlapping each other after the manner of *pandalis*, and like them presented a smooth and greasy appearance.

It was some time before I could detect on the *Glechoma* a mass of eggs of precisely the same colour as the under-side of the leaf where they adhered, and only when the mass presently in a slight degree began to swell above the surrounding surface could I feel sure it was composed of eggs, so perfect was the assimilation.

In the interval while the eggs were maturing, Mr. Jeffrey and I exchanged ideas with regard to the probable food-plant, so as to be provided in readiness for the young larvæ, and I found we were both in accord in having fixed on the cruciferous plant as the most likely among those above mentioned, to have induced the parent insects to have parted with their eggs so freely, as they had, both on it and the other leaves, probably from knowing the right food was present which their progeny would unerringly find; and we had good ground for assuming this to be the case, as we remembered the fact that our only two other British species of *Pionea*, viz.: *forficalis* and *margaritalis*, both feed on *Cruciferæ*.

Accordingly, when the eggs hatched on 2nd, 3rd, and 4th of August, we were both prepared with *Barbarea vulgaris* for the young larvæ, whose liking for it became soon unmistakeably apparent, for though the other kinds of leaves were at first put with it, yet each little larva in turn found its way from them to the *Barbarea*, and crept down the upper-side of the leaf to near the stalk and there rested, and in course of an hour or two there became a numerous assemblage of the little creatures lying in rows side by side most contentedly, and where they afterwards began to feed, and to spread themselves in small companies over the surface, but showed no disposition to wander away from the leaf: thus they continued all through their subsequent stages, unto the very end of their career, to be of exceptionably amiable disposition, never interfering with one another when, as often happened, some would be laid up to moult while their companions were still by their side feeding, in such a sociable manner as to suggest the probability of their being in nature more or less gregarious.

Very soon I experimented with six individuals by placing them on leaves of *Sinapis arvensis*, and they contentedly throve on this food as long as it could be supplied, but after a time these plants seeded so rapidly that good leaves were difficult to obtain, and as they would not eat the seed pods of this or the other plant but only the leaves, I eventually, after they had moulted, returned them to their former companions on the *Barbarea*; Mr. Jeffrey had also varied the food of some of his larvæ, by giving them *Cardamine amara*, and he found they took to it freely; the result of these experiments tended to the belief that though the *Barbarea* is at least one of their natural food-plants, yet that there are other plants liked by them quite as well to be found amongst the tribe of *Cruciferæ*.

The larvæ moulted thrice, first from the 8th to 10th of August, a few rather later, the second moult happened with most of them on the 17th and 18th, and the third moult occurred with some on the 24th, and all had safely accomplished that operation by the 27th of the month.

By the 9th of September, all were full-fed and shut up in cocoons of earth, more or less in small companies partly clustered together, many attached to the leaves lying on the surface of the ground, in which none had gone to any great depth.

The perfect insects were bred, the first by Mr. Jeffrey, as early as June 29th, 1882, followed by a very great number in his cages, where they continued to appear at intervals, often three or four together, and occasionally six at a time, up to the 27th of July,—though with me the first appeared on July 14th, and then my anxiety was dispelled by a feeling of great satisfaction at the completion of data for this history.

The egg of ***stramentalis*** is ovate in shape, very flat at first, but swells gradually, and in about six days appears to be finely reticulated on the surface, and is then glistening and of a brownish-ochreous yellow colour, transparent enough to show through the shell the greenish embryo coiled round within, and surrounded with yellow granules; on the seventh day it is more filled out and rather prominent, and then becomes a little dingier in tint, and hatches on the day following.

The newly-hatched larva is green, and rather transparent, with a flattened black shining head and dark brown neck-plate, and on the body can just be discerned most minute black dots and hairs; after eating out little pits and channels from the cuticle, causing transparent blotches on the leaf for about five or six days and acquiring more colour, it becomes of a very pale watery-green as it lays up to moult.

After the first moult it eats holes quite through the leaf, and its ravages are very perceptible; its head is black, the back dark green, the belly pale watery-green, the sides of the shining neck-plate dark brown, while the middle of the plate is of the same green colour as that of the back, the wart-like spots are of the ground colour but have dark brown centres bearing single hairs, and a pale ring is at the base of each spot.

Soon after the second moult it is very dark on the back with a deep and subdued blackish olive-green colour, while the belly has a much lighter tint of the same, these are separated by a spiracular stripe of bright yellow, the head, the side margins of the neck-plate, and the warty spots on the upper surface are shining black, on each side of the back are two very fine and much interrupted series of white linear dots, less broken on the second segment to the end of the fourth than on the others, the warty spots on the ventral surface are of the ground-colour, having dark olive-brown centres.

Directly after the third moult and for a day or so the ground-colour of the larva appears perfectly black, which enhances the brillancy of the broken white lines and the yellow spiracular stripes, but by degrees, after it settles down to feed again and grow, the black skin expands and the ground-colour of the back becomes more and more green until it is again of a blackish olivaceous-green, when the length ranges from 13 to 16 mm.

It now consumes a great quantity of food and the plump skin begins to shine a little; at the end of about ten days it attains full-growth, of an average length of 21 mm., and is thick in proportion, tapering a little at each end, the anal legs extended behind in a line with the body; the glossy black head has the upper lip light green, edged at the mouth with black, the papillæ colourless, the side margins of the plate on the second segment and the warty tubercles each with a hair are black and glossy, the upper series of broken linear white dots commence rather wide apart on the front margin of the second segment, and in their course down the back form a base to the upper-side of each first pair of tubercles, the lower series commence on the third segment and are still more interrupted, the spiracular stripe of very bright and deep yellow begins on the second segment and extends to the thirteenth, another narrower stripe begins on the fifth and follows almost close below, of either pale primrose-yellow or whitish, the circular spiracles are yellowish-brown with shining black centres, the belly is of a dingy drab-green, less dark than the back, the anterior legs are greenish, the ventral and anal legs almost colourless: after the ten days' feeding and while still eating at intervals it gradually contracts its length, and the dark back assumes a bright purplish-violet coloured ground more shining than before, when it is very beautiful, but in two more days' time it ceases to eat, and then the spiracular yellow stripes lose their brilliancy, while it lingers a few hours before spinning its cocoon on or just below the earth, wherein it remains in the larval state and retains the purple-violet colour until spring of the year following, when it changes to a pupa.

The broad-oval cocoon is covered with particles of earth, and measures from 16 to 19 mm. in length and from 10 to 12 in breadth, the interior being very smoothly lined with pale drab-coloured silk; the pupa is of rather a dumpy figure, from 8 to 9 mm. long, the wing-covers longish, of a light yellowish-brown colour marked with dark brown and having the nervures in high relief, the eye-pieces and abdomen dark brown, the surface smooth and glossy, the last segment of the abdomen is a little prolonged and rounded off at the tip without any points of attachment, which probably would be in this instance superfluous, as the tail of the pupa is brought to rest closely packed against the side of the cast off larval skin, bristling with stiff hairs, which evidently afford sufficient support and resistance for the escape of the insect.

Emsworth: *September* 11*th*, 1882.

A NEW EUROPEAN *PANORPA*.

BY R. McLACHLAN, F.R.S., &c.

For some years I have had in my collection one ♂ *Panorpa*, taken by Baron von Nolcken in the island of Œsel, in the Baltic, that appeared to represent an undescribed species, in some respects intermediate between *P. communis* and *P. germanica*, but nearer the latter. Afterwards I saw a ♀ captured in Saxony by Herr Rostock, apparently of the same species. Quite recently a second ♂, from Finland, captured by Herr Appelberg, has come under my notice. As the MS. name under which I returned the Saxon specimen has recently found its way into print ("*P. hybrida*, McLach.," *cf.* Rostock in "Entomologische Nachrichten," vii, p. 224), it is desirable to describe the species.

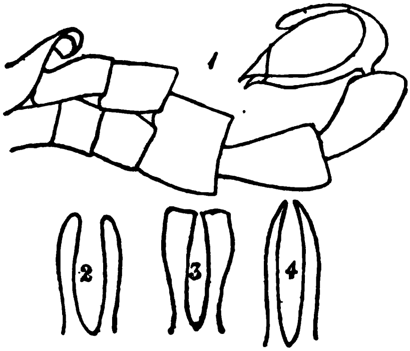
PANORPA HYBRIDA, *n. sp.*

♂. Head black above, yellowish posteriorly; rostrum yellowish or testaceous, with two longitudinal blackish or piceous streaks scarcely extending to the apex; palpi testaceous, terminal joint fuscescent; antennæ fuscous, the basal joint yellow.

Thorax black above: pronotum yellow on its posterior margin; meso- and meta-nota with a yellow central line and yellow scutellum. Sides wholly yellow or testaceous.

Legs testaceous; terminal joint of tarsi fuscescent; claws testaceous, with three teeth internally below the apex.

Abdomen blackish to end of 6th segment, with testaceous lateral longitudinal lines; third dorsal segment narrowly testaceous on its posterior margin, which, in its middle, is produced into a very large, rounded, testaceous hump clothed with black hairs, and extending over a portion of the succeeding segment, in a cavity in which it fits; 7th to 9th segments wholly testaceous, formed as in *P. germanica*; appendages of the 9th (the cheliferous) segment elongate, band-shaped, not much dilated to the tips, which are regularly rounded (not truncate), the colour testaceous, with blackish hairs, which are more numerous at the tips.



Wings broad, broadly-elliptical at the apex, vitreous with fuscous neuration; pterostigma pale yellowish. Marking apparently variable. In the ♂ from Finland the only markings are short fuscous transverse spots on the anterior margin (whereof two on the pterostigma are the most prominent), some apical spots, and a slight clouding on some of the transverse nervules. In the ♂ from Œsel there is an abbreviated maculose transverse fascia towards the base, succeeded by a median elongate costal spot, which is followed by a sub-apical, angulose, narrow, complete fascia; there are also apical spots and some clouding of the nervules. (The ♀ is not now before me; according to memory the dark fasciæ were more distinct, and the apex had a band broken up by pale spots, which were enclosed in it).

Expanse, ♂, 29—31 mm.; ♀, 34 mm.

Island of Œsel (*Nolcken*, 1 ♂); Finland (Carelia, *Appelberg*, 1 ♂, in the Helsingfors Museum); Saxony (Dretschen, *Rostock*, 1 ♀).

Equal to large typical specimens of *P. communis* (excluding *P. vulgaris*, Imh.) in size, but structurally allied to *P. germanica*, with which it agrees in the comparative length of the four modified terminal segments, and also, to some extent, in the nature of the wing-markings. It differs especially from *germanica* in the more produced hump on the posterior margin of the third dorsal segment, and in the form of the appendages on the cheliferous segment, which, in *germanica*, are shorter, more flattened, and with the apex truncate and more dilated. This latter character is conclusive (and there are also differences in the parts underlying these appendages, but not easily definable without dissection). The same characters will separate it from the South European *P. gibberosa*, but in this latter, the hump on the third dorsal segment approaches that seen in *hybrida*.

It is possible that *P. hybrida* is peculiar to Northern Europe, and no doubt it has been hitherto generally overlooked, or considered as only a large form of *P. germanica.*

Fig. 1 represents the greater portion of the abdomen of *P. hybrida,* ♂, from side; fig. 2, appendages of the cheliferous segment of *P. hybrida*; fig. 3, same of *P. germanica*; fig. 4, same of *P. communis.*

N.B.—I wish it were as easy to define any structural differences between the large typical form of *P. communis* and the (usually) smaller, more marked form known as *P. vulgaris,* Imhoff (= *var. diffinis,* McLach., *olim.*). I still incline to consider them distinct; but in a series of nearly 100 examples before me, there are several that might apparently be placed in either *communis* or *vulgaris,* as defined only by size and markings.

Lewisham, London:
15*th September,* 1882.

P.S.—In my paper on the species of *Panorpa* occurring in Europe, in the Trans. Ent. Soc. Lond., 1869, I identified with *P. picta,* Hag., a ♀ specimen from South Russia, which is figured on pl. iv, fig. 11. Having since received many examples of the true *picta* from Asia Minor and Persia, I am now by no means certain that the South Russian insect is specifically identical, and it may be well to retain for it the name *nigrirostris,* under which it was received from Zeller. In the true *picta* the wings are in no way tinged with yellow, and the black bands and markings are broader and more distinct. Perhaps a smaller ♀ from Transcaucasia is identical with *nigrirostris.*—R. McL.

NOTES ON *TENTHREDINIDÆ.*

BY P. CAMERON.

(*Continued from Vol.* xviii, *page* 67).

Tenthredo coxalis, Smith, Journ. Linn. Soc. Zool., ii, p. 116, As there is nothing in the description of this species to show that it is not a true *Tenthredo,* I may state that it is a *Strongylogaster,* with pilose antennæ and truncated clypeus. The type I examined in the Hope Museum, Oxford.

Ancyloneura, Cameron, Trans. Ent. Soc., 1877, p. 91, = ♀ of *Cladomacra,* Smith, Ann. Nat. Hist. (3), vi, p. 256.

Lophyrus tropicus, Norton, and *L. cordoviensis,* Norton, belong to the genus *Brachytoma* of Westwood. The genera belonging to the sub-family to which these species belong may be briefly characterized as follows:*

A. Antennæ 10- 11-jointed, labial palpi 1-jointed, maxillary 3-jointed... *Decameria*, Lep.

B. Antennæ with more than 11 joints.

1. The antennæ with more than 13 joints, flabellate in the ♂, maxillary palpi 4-, labial 3-jointed; 2nd cubital cellule usually receiving both recurrent nervures, appendicular cellule in hind wings very small... Type, *L. tropicus*, Norton. *Lophyroides*, *g. n.*

2. The antennæ 13-jointed, maxillary palpi 2-, labial 1-jointed; 2nd cubital cellule usually receiving only one recurrent nervure, appendicular cellule in hind wings large ....*Perreyia*, Brullé.

The genus *Camptoprium*, Spinola, is no doubt identical with *Decameria*; but Spinola describes the palpi as long filiform and 6- and 4-jointed. I suspect, however, that this statement is erroneous.

Perreyia (?) *anomala*, Kirby, List of Hym., i, p. 90, pl. vi, fig. 14, is evidently identical with *Lophyroides tropicus*, Norton. What Mr. Kirby (*l. c.* pl. vi) figures as the ♂ of *Perreyia compta*, Norton, is, so far as I can make out from the figure, identical with a species I have described in the "Biologia Centrali-Americana" under the name of *Lophyroides ruficollis*. As Mr. Kirby appears (*l. c.* p. 90) to doubt if Norton had really males of *P. compta*, I may mention that all his specimens were males. I have examined them through the kindness of Dr. Henri de Saussure.

Cephalocera (?) *calcar*, Norton, Trans. Amer. Ent. Soc., i, p. 51, belongs to the genus *Loboceras*, Kirby.

Nematus betularius, Htg., Blattw., 192, 17, = *erythrogaster*, Thoms., *nec* Norton. Before I was aware of the identity of *erythrogaster* with *betularius*, I named it *crassiventris* (Ent. Mo. Mag., xiv, 267), and Mr. Kirby (List of Hymen., i, p. 132) has named it *luteogaster*.

Nematus conjugatus, Dbm., S. E. Z., 1848, p. 177; Thoms., Opus. Ent., 623, 19. This species is British; I have found the larvæ in Clydesdale.

Nematus consobrinus, Voll., Tijd. Ent., xvi, p. 236, pl. x (1871), = *N. umbrinus*, Br. & Zad., Schr. Ges. König., xvi, p. 84 (1876). The late Prof. Zaddach confirmed this determination a short time before his death.

Nematus varius, André, Species d. Hymen., i, 193, = *N. pallescens*, Htg., Cameron, Fauna of Scot., Hymen., pt. 1, p. 40.

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* They will be more fully described in the "Biologia Centrali-Americana."—P. C.

Nematus monticola, Thoms., Hymen. Scand., i, 147, 77. I have taken this seemingly rare species in Clydesdale.

Nematus Marshalli, Cam., Ent. Mo. Mag., xii, p. 9. This species is most closely related to *N. myosotides*, Fab., but may be known from that common species by its body being shorter, and broader compared to its length, the antennæ are distinctly longer than the body, the abdomen is not much longer than the head and thorax and only black at the base, and the wings are much darker coloured.

Here is a puzzle for those interested in antiquarian Entomology. According to Thomson, *pappilosus*, Retz., is identical with *N. myosotides*, Fab., but that determination cannot be correct, for the latter feeds on clover, while *pappilosus* is a willow feeder of totally different habits and coloration. The description of the larva agrees very well with *N. pavidus*, Lep., *sec.* Zad., but I cannot make the description of the imago fit very well with the latter, unless it is the ♂ that De Geer describes.

Nematus bellus, Br. & Zad., *l. c.*, pl. 6, fig. 13 (1876); André, Species d. Hymen., i, p. 155 (1880), = *N. baccarum*, Cam., Ent. Mo. Mag., xi, p. 189, January, 1876. Brischke and Zaddach only figured the larva and gall, and I was only made aware of the identity of the two when I received types this year from Herr Brischke. The imago was first described by André *l. c.*

I have, during the last year or two, been re-investigating the gall-making *Nemati*, and have come to the conclusion that there are only three good species which form round berry-shaped galls on willows, namely, *viminalis*, Lin., *sec.* Vollenhoven; *baccarum*, Cam., = *bellus*, Br. & Zad.; and *herbaceæ*, Cam. This determination only refers to the species of which the habits are known; for it is quite possible that some of the species described by Thomson, and whose habits are still unknown, may also form round galls on willows.

It is very much to be wished that the Revision so well commenced by Brischke and Zaddach of the Palæarctic *Nemati* would be completed; but a revision, to be of any real value, would require to be based on collections from different parts of Europe, and especially on type specimens. These insects are so closely allied, that determinations made from many of the descriptions are pretty much guess work. Förster's species especially, notwithstanding the length of his descriptions, are very difficult to make out; and as most of them are founded on males alone, cannot be identified without an examination of his types.

Dolerus Chappelli, Cam. Mr. Kirby (List of Hymen., i, 219) sinks this name in favour of *geniculatus*, Lep., Mon., 122, 364. This, however, appears to me to be an exceedingly doubtful determination. To begin with, *geniculatus* has the knees testaceous, while with *Chappelli* the legs are entirely black; then, *geniculatus* is a ♂, and although the ♂ of *Chappelli* is still unknown, yet it may pretty safely be surmised, that its male will differ in the coloration of the abdomen from the ♀, like its close ally *anticus*. If the fact of its having the legs (like *Chappelli*) entirely black is a matter of no great importance, then *D. tremulæ*, Klug (known only as a ♂) might well be considered identical with *geniculatus*; but I believe myself the latter was founded on an extreme variety of *D. fulviventris*, the ♂ of which is very inconstant in the coloration of the abdomen.

Tenthredo chloros, Rudow, S. E. Z., xxxii, 387; Kirby, List of Hymen., i, p. 292, = *viridis*, L. (*scalaris*, Kl.).

Glasgow: *October*, 1882.

NOTES ON BRITISH *TORTRICES*.

BY C. G. BARRETT.

(*continued from p.* 59).

Œnectra Pilleriana, Schiff.—In May last I received from Mr. W. H. B. Fletcher, of Worthing, larvæ found by him feeding on *Statice limonium* on the South coast. They were variable, rather slender, cylindrical, or when full grown slightly flattened, active, very pale green, with a narrow darker green dorsal line, spots small, whitish, with delicate hairs, head and dorsal plate jet-black, anal plate yellowish or with the dorsal region grey, the ventral region greenish, the spots large and distinctly white, and the dorsal plate brown bordered with black on both sides.

They rolled together the leaves of *Statice limonium* from above, and devoured the upper surface, when full grown changing to dark brown pupæ in a slight cocoon, each in a rolled leaf. The moths emerged in July, and were all *Œnectra Pilleriana*, a result wholly unexpected to me, as I felt sure that those with large white spots would produce *Tortrix icterana*, and the others perhaps the salt-marsh form of *T. costana*.

The description of the larva of this species quoted by Hofmann from Audouin is as follows: " Green, yellow at the sides, with numerous *dark* raised dots (wartlets), head and dorsal plate black, the former with a triangular white marking. From autumn to May in rolled-up *vine* leaves. In the south of France it is often very mischievous, hibernating under bark of vine branches." He further says it has also been found on *Stachys*, *Iris*, and *Salvia*.

Heinemann, however, says nothing about its feeding on vine, and does not describe the larva. He merely remarks that it feeds on *Stachys germanica*, and refers to Mr. Stainton as an authority for its feeding also in the seeds of *Iris fœtidissima*.

If I remember rightly, it was Mr. Bond who reared it from the last named plant. Professor Zeller remarked to me that "he could readily believe this," intimating, as I understood, that it might feed on anything. He also confirmed the account of its being attached to the vine, otherwise it would have seemed probable that Audouin's larva with "dark wartlets" might be distinct from ours with white ones.

I have carefully compared the specimens now reared with types sent me by Professor Zeller, and find that they agree accurately, except that German specimens have the ground colour of the fore-wings in the males lighter and yellower, and that the hind-wings are also paler in both sexes.

Three specimens given me many years ago by my old friend Mr. Bond agree with those now reared.

Retinia duplana.—Through the kindness of friends from time to time, opportunity has been afforded me of examining authentic specimens of almost every known or reputed British *Tortrix*, with the exception of *Retinia duplana*. Reputed *duplana* have been sent, of course, but they have proved generally to be small *turionella*, a species of which specimens from the south of England are far larger than those from Scotland; consequently, Mr. Threlfall's notice of the capture of the former species (*ante* p. 113) awakened eager interest and enquiry. Mr. Threlfall very kindly and promptly forwarded the specimen, with the remark, "that it had been compared and found to agree with a type in one of the larger northern collections." I am sorry to say that it is not correctly named; whence I deduce the conclusion that the type with which it was compared may be in the same predicament.

This seems to confirm a suspicion which I have long entertained, that we have *no British duplana*; certainly the insect described by Wilkinson under that name is more likely to be a small *turionella*, and I therefore venture to appeal to possessors of reputed *duplana* for *evidence*. I shall be exceedingly thankful for the sight of any such specimens.

I may add, that the head of *duplana* is *grey*, not ochreous, and that there is little or no ochreous suffusion of the fore-wings.

Pembroke: *October*, 1882.

SYNTELIIDÆ: A FAMILY TO INCLUDE *SYNTELIA* & *SPHÆRITES*, WITH A NOTE OF A NEW SPECIES OF THE FIRST GENUS.

BY GEORGE LEWIS.

During my recent tour in Japan, I continually met with a species of *Syntelia;* I took it first in the province of Yashiu, in June, 1880, and in the autumn of the same year in South Hokkaido, and last season I met with it in early spring on the banks of the Kumakawa, in Higo, and in August in Sado. These places give the species a range of over 800 miles of latitude. It hibernates under moist bark with *Hololepta* and other flat *Histeridæ*, and in summer it comes to exuding sap in company with *Velleius*, *Helota*, *Cladognathus*, and *Rhomborrhina*. On small oaks of 6 or 8 inches diameter, where the larvæ of a large *Hepialus* were feeding in summer after the manner of our *Cossus*, I have taken all these species together, and I was inclined at the time, by its habits, to consider *Syntelia* to be an aberrant Histerid. And there is no doubt that it is very closely allied to the *Histeridæ*, but the difficulty of uniting it to that family arises from the proximity of the anterior coxæ and the prominent mesosternum which widely separates the anterior from the middle legs. Lately I submitted for examination some specimens to Dr. Sharp, and he kindly pointed out its near ally in the genus *Sphærites*, and its relationship to that insect is now evident to me to be such as exists between *Hololepta* and *Saprinus;* one is an arboreal species, the other a convex stercoraceous feeder. The prominence of the mesosternum in front of the middle coxæ seems to indicate a relation to *Lucanus*, and the spines on the tibiæ and general outline are also somewhat like *Figulus*, but the form of *Syntelia* is only analogous to the *Lucanidæ* owing to similar habits, for the club of the antennæ consists of solid rings. In *Sphærites*, the mesosternum ends abruptly as in *Hister*, and the middle and anterior coxæ, therefore, almost touch, but the shape of the pygidium and the other sections of the abdomen, the form of the antennæ, legs, and eyes connect it with *Syntelia*, and it is doubtless, as Dr. Sharp says, of the same family. The eyes at first sight seem differently constructed in *Sphærites* to *Syntelia*, but this is only owing to the sculpture and shape of the head. *Synteliidæ*, therefore, may precede *Histeridæ* in catalogues and comprise at present the two genera mentioned, which may be distinguished *inter se* by the anterior coxal cavities being closed behind in *Syntelia* and open in *Sphærites*. *Syntelia*, as a genus, extends from Mexico through Japan to East India, and in so wide a range the finding of new species is almost certain; perhaps even genera connecting it and *Sphærites* may be found, but, unfortunately, neither insects are of the class usually sent home by ordinary collectors.

SYNTELIA HISTEROIDES, *n. sp.*

Black, shining: head with a few large scattered punctures; thorax, disc smooth with some deep punctures at the sides, lateral edge and base emarginate, elytra smooth with six deep punctate striæ, four dorsal more or less broken, one outer and one sutural complete, the last continuous, running round both the apex and base of elytra and joining the outer elytral margin. The pygidium is evenly and coarsely punctured, convex in the middle, with lateral depressions deepening and ending before the base. Beneath, the segments of the abdomen are sparsely punctured in the middle, more thickly at the sides, mesosternum behind the middle coxæ smooth in the medial region, and in front of coxæ thickly and somewhat strigosely punctate.

This species differs much from *S. indica*, the chief points of variance being colour, punctuation of pygidium, the more convex and quadrate thorax, and the deep irregular elytral striæ. The spines on the tibiæ correspond in both species. The elongation of the thorax in Westwood's figure of *indica* is somewhat exaggerated.

Length 6½—7½ lines.

Distributed in Japan, but rather rare.

Wimbledon: *7th October*, 1882.

Note on Eubria palustris.—During his recent visit from America, Dr. Horn called my attention to a note of his in the "Bulletin de la Société Entomologique de France" (1879, p. cxxxviii), respecting *Eubria palustris*, which is stated by European authors to have simple claws. He points out that the male of this species has the anterior claw to all the tarsi bifid at the apex; and he expresses his belief, from the relationship which this genus bears to the allied genera, that if Coleopterists would examine their specimens, the female would be found to have the claws simple. I at once examined all accessible specimens, but found them all males. Dr. Horn, however, found in Mr. Janson's collection an example which, from a slight difference in the form of the head, and rather less impressed striæ on the elytra, he thought might be a female, and brought it to me for examination. I am glad to say that his surmise was correct, the specimen, by its simple claws, proving itself to be a female. The female of this insect must be very rare; and it would be interesting if entomologists would examine their specimens and publish the results. *Great* care is required in examining the claws, as the division of the apex of the claw being lateral, it is only visible when viewed from above.—CHAS. O. WATERHOUSE, British Museum: *October 11th*, 1882.

Coleoptera at Hunstanton.—During a short stay at Hunstanton at the latter end of August last, I captured the following (amongst many other commoner) species of *Coleoptera*, viz.:—*Notiophilus substriatus*, *rufipes*; *Dyschirius thoracicus*, *politus*, *salinus*; *Amara bifrons*; *Harpalus punctatulus*, *tardus*; *Cillenus lateralis* (this species was extremely abundant, in two instances I found from 20 to 30 specimens feeding together on the dead bodies of sand-hoppers; *Bembidium Stephensi*, *concinnum*;

Cnemidotus impressus; Hydroporus parallelogrammus; Falagria thoracica; Bolitochara bella; Myrmedonia humeralis (under a stone in a ditch); *Encephalus complicans; Diglossa mersa* (under stones on the beach, from one to three specimens under a stone); *Heterothops binotata*; *Ocypus compressus; Xantholinus tricolor; Bledius tricornis, unicornis* (both in abundance in the salt marshes); *Nossidium pilosellum* (in plenty on the surface of a decaying stump); *Carcinops minima; Saprinus immundus; Meligethes coracinus; Otiorhynchus scabrosus, ligneus; Sciaphilus muricatus; Poöphagus nasturtii* (in some numbers on water-cress); *Psylliodes chalcomera, chrysocephala var. nigricollis, marcida; Apteropeda graminis, globosa, splendida.*—W. G. Blatch, 214, Green Lane, Smallheath, Birmingham: *October* 16*th*, 1882.

Solenopsis fugax at Sandown, Isle of Wight, &c.—I occasionally take a few ants when I come across any that look strange. Last Easter, at Sandown, Isle of Wight, I found under a stone a colony of *Solenopsis fugax*; the insect struck me by its minute size, which is less even that that of the London ant, *Monomorium Pharaonis* (*domesticum*). Under a stone in the Landslip near Ventnor, I found, some time ago, *Tetramorium cespitum* and *Lasius umbratus* in company. Mr. E. Saunders kindly determined all the species for me; he did not possess the *Solenopsis fugax*, so I conclude that it must be one of our rarest species. If any Hymenopterist would like a specimen, I should be happy to send him one, as I have a few to spare.

Priocnemis hyalinatus near Lincoln.—Some time ago I found, on the edge of a pine plantation at Hykeham, near Lincoln, a specimen of *Priocnemis hyalinatus*, which, I think, is one of the rarest of the *Fossores*.—W. W. Fowler, Lincoln: *October* 13*th*, 1882.

Actidium coarctatum near Gloucester.—A short while ago (*ante* p. 20) I recorded the capture of a single specimen of *Actidium coarctatum* in a hotbed at Barnwood, near Gloucester, and mentioned the fact as being interesting as corroborating Haliday's statement that he had found this river-bank species in such a locality. As my single specimen might have been the result of accident, I may perhaps mention the fact, that I have lately found several specimens (more than a dozen) in the same hotbed in company with a profusion of *Nephanes titan*, and a few *Millidium trisulcatum, Ptilium foveolatum, Monotoma longicollis, Atomaria apicalis*, &c. I did not see a single *Trichopteryx*, or even *Ptenidium apicale* in the hotbed. There was a considerable amount of sawdust mixed with the manure; this hint may, perhaps, prove a useful one, as it is quite possible that the rotting wood was a great attraction.—Id.

Ceraleptus lividus, Stein, &c., at the Camber Sand-hills.—Mr. H. G. Henry and myself had a long day at the above locality on October 3rd, chiefly working at the long moss which covers the eastern side of the sand-hills. This produced us sixteen specimens of *Ceraleptus*, which, I believe, has hitherto been recorded only from Deal. Eleven specimens fell to my lot and five to that of Mr. Henry. *Rhyparochromus chiragra*, Fab., and *sabulicola*, Thoms., also turned up. *Plinthisus brevipennis*, Latr., was very common and could have been had in any numbers. *Hyperaspis reppensis*, Hbst., was somewhat abundant.—E. P. Collett, St. Leonards-on-Sea: *October* 6*th*, 1882.

Hemiptera and Coleoptera at Chobham.—During the last week in August and the first in September, I had some collecting at Chobham. For such success as I met with, my thanks are very largely due to Mr. Edward Saunders, who very kindly gave me the benefit of his own experience, and showed me the localities for all the best things. Amongst the more noteworthy of my captures may be mentioned the following:—

Hemiptera.—*Corizus maculatus*, by sweeping in a damp place; *Alydus calcaratus*, running and flying in sandy places and very active in the hot sunshine; *Calyptonotus pini*, chiefly in the larval form amongst dead leaves in sandy and heathy places; *Lamproplax piceus*, plentiful amongst damp rubbish at roots of rushes, &c., at Gracious Pond; this is apparently a fragile species, for, notwithstand-that many of them had evidently only just assumed the imaginal form, it was rather difficult to find specimens that possessed the full complement of legs and antennal joints; *Rhyparochromus dilatatus*, common in sandy places, amongst dead leaves &c.; *Cymus melanocephalus*, abundant by sweeping at Gracious Pond; in this species I have noticed a malformation of the antennæ different from that which so frequently occurs in the *Lygæidæ*; in two specimens one of the antennæ is considerably shorter than the other, though the normal number of joints is present; one of these has the first three joints shortened, the second and third being also thickened and darkened, and the fourth of the usual form and size; the other has the first joint normal and the other three shortened, the second and third being also thickened and darkened. *Calocoris ticinensis*, a few as the result of *much* sweeping at Gracious Pond; I could not find it elsewhere; I was apparently rather late for this species, as most of them were more or less damaged. *Pœciloscytus unifasciatus*, by sweeping; *Chlamydatus caricis*, abundant, the ♀ chiefly by searching at roots of rushes, and the ♂, which was much more active than its partner and readily took to flight, chiefly by sweeping in the same places; *C. pygmæus*, not uncommon at roots of rushes where there was the greatest accumulation of dead and decaying bits of the plants, these all came by searching in such spots, I could get none by sweeping. *Nabis flavomarginatus* and *lineatus*, at roots of rushes; *Coranus subapterus* and *Salda marginalis*, in bare places on the heath; *S. Cocksii* and *Hebrus ruficeps*, in wet Sphagnum.

Coleoptera.—Being chiefly occupied with the *Hemiptera*, I secured only a few beetles, the following being the best:—*Amara infima*, under stones in bare places on the heath; *Bembidium nigricorne*, in heathy places; *Anchomenus gracilis*, *Gymnusa brevicollis*, and *Philonthus nigrita*, in wet Sphagnum; and *Cryptocephalus lineola*, by sweeping. *Cicindela sylvatica* was still about in some numbers on one part of the heath, but had to be carefully "stalked."—E. A. Butler, University Lower School, Hastings: *October 17th*, 1882.

Description of the larva of Catoptria expallidana.—In the autumn of 1880, I found two plump, fat-looking larvæ, apparently belonging to the genus *Catoptria*, feeding in the flower-heads of the corn sow-thistle (*Sonchus arvensis*). In due course they spun up, and, in the following July, I was surprised by the emergence of *C. expallidana*. When the autumn again returned, I once more examined the sow-thistles, and found the larvæ this time in some abundance. I collected about twenty specimens, sufficient, as I thought, for all purposes, yet not a single one produced the perfect insect this summer. Many Dipterous parasites appeared which accounted for some of them, whilst the cold weather in June and July, just at the critical time of the larva's change, when, probably, a certain degree of heat is absolutely necessary to enable it to go through the process, explained, perhaps, the failure of the rest. The larva is plump and fat, somewhat attenuated behind, and with deeply cut divisions. A furrow crosses each segment rather behind the centre. Colour, orange as far as spiracular region, whitish below, the line of separation being somewhat abrupt. Occasionally, a specimen occurs in which the whole surface is whitish. Head small, chestnut; mouth black. Thoracic plate large, pale brown; anal plate faintly amber-coloured, variegated with pale brown. Its resemblance to some of its allies is very close: I compared it on several occasions with *cana* and *Scopoliana*, and could see no broad, self-evident distinction, so far as form and markings went, but there was one point that served to distinguish them at once, and that was the difference in their manners.

Scopoliana and *cana* were the slow, sluggish creatures their forms suggested, whereas my larva belied its appearance, and was quick and active in its movements. It feeds concealed in August and September on the seeds of *Sonchus arvensis*, passing, when necessary, to a fresh flower, but not uniting them with silk. The cocoon is spun just beneath the surface of the soil, and the larva remains unchanged in it till the following summer, when the pupa-case is left protuding after the emergence of the moth. The larvæ showed no tendency to wander when they had done feeding, but burrowed at once, which made me hope I should breed the perfect insect in good numbers this summer, but the cold weather altogether beat me. Outside, as well as in my breeding bottles, the insect seems to have failed, for no larvæ could be found this autumn.

That a certain amount of heat is requisite before the pupal state can be assumed, especially in the case of those larvæ that remain for a long time unchanged in their cocoons and want, as it were, to be roused up, I think I had recently a striking proof in *Ephippiphora regiana*. Wanting a few specimens, I gathered at midsummer a dozen or more cocoons: one moth came out in July, the rest of the cocoons at the present moment still contain unchanged and living larvæ.—JOHN H. WOOD, Tarrington, Ledbury: *5th October*, 1882.

The question of parasitism or non-parasitism in certain Eurytomides.—I see that at p. 48 of the present volume of the Ent. Mo. Mag., it is stated that Professor Westwood read a paper at the Meeting of the Entomological Society of London, May 3rd, 1882, on this question. Mr. Fitch's opinion is also given. I think the question is already sufficiently solved in an article of mine in the "Archives Neerlandaises des Sciences exactes." v, pp. 420—27, pl. xii (1870): "Sur la manière de vivre de l'*Eurytoma longipennis*, Walk." I have there given the description of the metamorphosis and habits, with figures of the different states, and of the swellings on *Psamma arenaria*, and the parasites. I also referred to an analogous observation on the non-parasitic habits of *Eurytoma flavipes*, Först., by an unknown Entomologist in the Proc. Ent. Soc. London, ser. 3, ii, p. 141.—H. WEYENBERGH, Cordova, Argentine Republic: *August 22nd*, 1882.

[Dr. Weyenbergh's article maintains that *Eurytoma* is *non-parasitic*. He will find it alluded to by Prof. Westwood in his paper as printed in Trans. Ent. Soc. Lond., 1882, p. 320, but not in an extended manner. His other reference occurs in the President's Anniversary Address to the Ent. Soc. on January 22nd, 1866, who quotes from Dr. Asa Fitch's "Reports on the Noxious, &c., Insects of New York."—Eds.]

Parasites on Homoptera.—In his "History of Glanville's Wootton" (1878), at page 304, Mr. C. W. Dale remarks, "I wish to call attention to a very curious black parasite, about the size of a mustard-seed, adhering to the side of various species of the *Homoptera*, where the elytra join the thorax. Through the microscope it looks like a little black bag. I think it must belong to the *Acari*. Not having seen any account of it, I propose to call it *Homopterophagus dorsettensis*."

I have no doubt these parasites are *Gonatopi* in the larval condition.

As an addition to my previous note at page 116, I may now state, that on the 28th of last month I took nine specimens of *Typhlocyba cratægi*, Doug., on a hawthorn bush, one ♂, eight ♀, and of the latter two had each an ovoid parasite attached near the base of the abdomen, not so large nor so black as usual, but yellowish, fuscous outwardly. I attribute the size and light colour to immaturity, for the foster-insects were but newly disclosed, and had not attained the coloration of maturity. Unless these *Typhlocybæ* hibernate (which I never knew the species to do), the parasites had but a short time before winter to feed up, which they would have to do if the host died within a few weeks.—J. W. Douglas, 8, Beaufort Gardens, Lewisham: *October* 10*th*, 1882.

Note on Ephestia passulella.—As supplementary to Mr. Buckler's notes on *Ephestia passulella* in this month's Ent. Mo. Mag. (*ante* p. 104), I may add that the species is evidently double-brooded. On the 21st of June last, I received alive from Mr. Davis, of Dover, three captured pairs of the moth, which deposited a considerable quantity of eggs, and from them I have, during the last few days, been breeding imagos. Some are still pupæ, and larvæ are yet daily spinning up and changing, but all apparently are about full-grown, and show no disposition to hibernate. No doubt this brood corresponds with the one from which Mr. Buckler's eggs were obtained; the moths sent me in June were rather late specimens, as Mr. Davis had been taking the species some time previously. My moths deposited their eggs on figs, on which the larvæ have fed throughout. Their glass jar has stood in a cold room facing the north.—Geo. T. Porritt, Huddersfield: *October* 2*nd*, 1882.

Error as to occurrence of Retinia duplana.—Mr. Barrett informs me that my supposed *Retinia duplana* is a male of *Eriopsela quadrana*. The specimen was named from a "type" in Mr. Hodgkinson's collection, and the mistake is thus accounted for. I owe Mr. Barrett my thanks for thus putting the identity of the insect beyond a doubt.—I. H. Threlfall, 4, East Cliff, Preston: *October* 14*th*, 1882.

Obituary.

Dr. G. H. K. Thwaites, F.R.S., F.L.S., died at Kandy, Ceylon, on September 11th, in his 72nd year. He was best known as the Director of the Botanic Garden at Peradeniya, Ceylon, a position he had held since 1849 till his retirement a few years since, and his name will long be remembered in connection with the spread of Cinchona culture, &c., in the island. Before his departure for the east he had made a reputation as a cryptogamic botanist, but he also turned his attention to Entomology and published several short notes in the Proceedings of the Entomological Society, &c. During his long residence in Ceylon he constantly forwarded consignments of insects to his friend Professor Westwood, who has described many curious forms (especially in *Paussidæ*) from his collections. Only last year Professor Westwood described a singular larval form, sent by him, the ordinal position of which remains doubtful (*cf.* Trans. Ent. Soc., 1881, pp. 601—603, pl. xxii). He was a man of simple habits, and for many years a strict vegetarian. He was elected into the Entomological Society so long back as 1838, into the Linnean Society in 1854, and into the Royal Society in 1865.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Sept. 6th,* 1882: H. T. STAINTON, Esq., F.R.S., &c., President, in the Chair.

Mr. J. Jenner Weir stated that he had recently observed an eel rise and take a caterpillar from off the edge of a leaf of *Nuphar lutea*; and he referred to a recent article in Chambers's Journal with regard to the proceedings of a pet trout, and its discrimination of caterpillars in respect to colour, &c.

Mr. McLachlan exhibited about 500 specimens of *Neuroptera* of various families, being part of a collection he had made in July, chiefly in Switzerland and in the Val Anzasca, North Italy. Amongst others were twelve species of *Rhyacophila,* including about forty examples of a new species from the Val Anzasca (and Val Cannobina), and several of *Rh. Meyeri,* McLach. (from the same localities), hitherto known from a single specimen. There were also many specimens of *Coniopterygidæ,* including a species in which the wings (at any rate, in one sex) were marked with grey blotches (from the Val d'Anniviers), and another with nearly black wings (from Val Levantina), both divergent from the ordinary unicolorous white condition. He also exhibited a large piece of the so-called "indusial limestone" of Auvergne, recently given to him by Mr. H. W. Jackson, M.R.C.S., F.G.S., who had obtained it from near Romagnat in Auvergne. In calling attention to the fact that this singular geological formation appeared to consist entirely of masses of shell-covered caddis-cases, he read an extract from Lyell's "Manual of Elementary Geology," in which a probable explanation of the circumstances tending to produce the formation is given. He also stated, that although these cases must have pertained to the *Limnophilidæ*, fossil remains of insects of that family of *Trichoptera* were almost unknown, whereas others, of other families, apparently less suited for preservation in a fossil state, were plentiful.

The Rev. H. S. Gorham asked why it was that recent cases of this kind were so frequently formed wholly of one kind of shell?

Mr. McLachlan said it was apparently owing to the conditions under which particular larvæ found themselves with regard to building materials.

Miss E. A. Ormerod exhibited a species of *Lina,* which was stated to be doing great damage to hazels and willows in Norway. She also made some remarks on "rape-seed cake," and its effects upon wire-worms. The Indian cake was manufactured from mustard, and wire-worms feeding upon it when in a putrescent condition soon died, whereas they throve on the English cake, which was manufactured from rape.

Mr. Billups exhibited a large number of *Leptidia brevipennis*, Muls. (*cf. ante* p. 90), both living and dead, obtained in the Borough Market, London, from willow baskets imported from Cherbourg.

Mr. C. O. Waterhouse exhibited a pair of antelope horns from Durban, South Africa, greatly infested by the larvæ of *Tinea vastella*, the cases of which projected from them in all directions.

Mr. Olliff exhibited specimens of *Synchita juglandis*, a rare British beetle, found under bark of beech at Tunbridge Wells.

Sir S. S. Saunders read a paper on two new species of fig insects, one of which had been sent from Calcutta, and fed upon *Ficus religiosa*; the other was from Queensland, and frequented *Ficus macrophylla*, locally known as "the Moreton Bay Fig."

4th October, 1882.—The President in the Chair.

F. Swanzy, Esq., of Sevenoaks, was elected an ordinary Member, and Herr Gustav Weymer, of Elberfeld, a Foreign Member.

Mr. McLachlan exhibited nymph skins of *Hagenius brevistylas*, Selys, a dragon-fly of the sub-family *Gomphina*, remarkable for their very broad and depressed form. They had been collected in Texas by the late Jacob Boll. He called attention to L. Cabot's description and figure published in 1872.

Mr. C. O. Waterhouse stated that the beetle destructive to beer-casks in Rangoon, exhibited at the Meeting on August 2nd (*cf. ante* p. 120), was not *Tomicus* (*Xyleborus*) *Saxeseni*, but identical with a species described by Wollaston from Madeira as *Tomicus perforatus*, and by Walker from Ceylon as *Bostrychus testaceus*, the former name taking priority. He had seen it from both the old and new worlds, but it was not a British species.

Mr. McLachlan said this information had an important bearing upon the question as to whether the greater portion of wood-boring *Coleoptera* attack healthy living trees, or only those in which decay from other causes had already commenced, for in this case the beetles must have attacked the wood of the casks after the latter had been exported. He expressed his firm belief that such insects are not the primary cause of decay and death in trees, but only precipitate the result.

Prof. Westwood stated that Audouin's experiments tended to prove that these insects attacked healthy trees.

The Rev. H. S. Gorham and Mr. Waterhouse were of opinion that they did not do so, and agreed entirely with Mr. McLachlan as to the conditions favouring the attacks.

Prof. Westwood read "Further descriptions of insects infesting figs," in which a number of new forms were described (with accompanying figures). He pointed out how very numerous these minute fig-frequenting *Hymenoptera* were gradually proving themselves, and their importance as connected with the process of caprification. In effect they appeared to exist wherever the genus *Ficus* existed in a natural state. He was now acquainted with a multitude of species.

Mr. G. Lewis read a paper in which he attempted to prove that colour in insects is solely due to the action of light; adducing a large number of instances in support of his theory. The reading of this paper caused considerable discussion.

ANNOTATED LIST OF BRITISH *ANTHOMYIIDÆ.*

BY R. H. MEADE.

(*continued from p.* 33).

19. CHORTOPHILA, Macq., Rond.

Anthomyia, p. Meig., Schin., Walk.
Aricia, p. Zett.
Hylephila, p. Rond.
Hammomyia, p. Rond.

Gen. ch.—Eyes bare, contiguous, sub-contiguous, or sub-remote, in the males, approximate or remote in the females; arista pubescent or bare; face more or less prominent; abdomen mostly cylindrical in the males; alulets with small equal-sized scales; wings with the anal veins prolonged to the margin; legs black.

Sect. 1—*Forehead and face very prominent* (*buccate*).

1. BUCCATA, Fall.
2. UNILINEATA, Zett.
3. ALBESCENS, Zett.
   albula, Meig.
4. ARENOSA, Zett.

Sect. 2—*Forehead and face but slightly prominent.*

5. IMPUDICA, Rond.
   varicolor, p. ? Meig.
6. TRAPEZINA, Zett.
7. CINEREA, Fall.
8. CINERELLA, Fall.
   pusilla ?, Meig.
9. SEPIA, Meig.
10. BILLBERGI, Zett.

All the species in the first Section appear to be parasitic upon wild bees, and are, therefore, generally found in the vicinity of their burrows or nests.

C. BUCCATA, Fall.

This, the typical species of the group, has the face very prominent, of a silky-white or yellowish colour. The eyes are sub-contiguous in both sexes, though slightly wider apart in the females than in the males. The antennæ are small and short, especially in the females; the third joint being but slightly longer than the second. The arista is thickened at its base, almost bare in the males, but pubescent in the females. The thorax is whitish-grey, with the sides almost white; it is indistinctly striped. The abdomen is whitish-grey with black reflections, and an interrupted longitudinal dorsal stripe; it is cylindrico-conical, with small inflexed pale grey anal segments in the male, and ovoid, with pointed apex, in the female. The wings have the external transverse veins oblique, and slightly sinuous. The legs have the posterior tibiæ almost bare on their inner sides.

This species is of local occurrence. I captured several in May, 1881, on a piece of rocky ground at Silverdale, in Lancashire, near the burrows of some wild bees. I caught two of the bees while entering their holes, and on submitting them to Mr. Bridgman, he kindly named them as *Andrena albicans* and *Andrena fulva.*

C. UNILINEATA, Zett.

This species closely resembles the last; it is usually, however, rather smaller and more slender. The eyes are rather more widely separated in the males and much further apart in the females than those of *A. buccata*; the space between them in the latter sex being equal to about one-fourth of the width of the head. The transverse veins of the wings are usually very sinuous, especially in the males; and the hind tibiæ of the same sex are furnished with a tuft or series of soft hairs in the middle of their inner sides.

Not common. I captured both sexes in 1875, at Bowdon, in Cheshire, while on a visit to my friend, Mr. B. Cooke, and I have also received specimens from his own collection.

C. ALBESCENS, Zett.

This species resembles the two preceding ones in form and colour; it is, however, usually of a much smaller size, though it varies greatly in magnitude. There appear to be two distinct varieties, one as large again as the other; the former measuring 5 to 6 mm. (2½ to 3 lin.), and the latter only about 3 mm. The chief characteristic feature is the sub-plumose arista, on account of which Rondani placed it in a distinct genus (*Hammomyia*). The position of the eyes is much the same as in *C. unilineata*, but they are usually rather more widely separated in both sexes than in that species. The legs have the fore tibiæ ciliated along their outer sides with short hairs, in the males of the larger variety; and the hind tibiæ are also furnished with soft hairs on their inner and front sides.

Found in sandy places, but not common.

C. ARENOSA, Zett.

This well-marked little species is rather aberrant in its characters, for while it has the face very prominent, and resembles in its general features and habits the other species in this section, it differs from them all by having the abdomen depressed or flattened at the base, but thickened at the apex by the presence of large sub-anal male appendages. The eyes of the males are sub-contiguous, and those of the females widely separated. The hind tibiæ of the former are armed along the whole length of their inner sides with rigid hairs or bristles of moderate and even length. The colour, especially on the thorax, is very pale, almost white.

Rare or rather local. It chiefly frequents marine sand-hills. The only specimens that I have seen were given to me by Mr. B. Cooke, and were taken by him at Southport, in Lancashire, where it is not uncommon.

C. IMPUDICA, Rond.

This species is characterized by the males having two large sub-ventral lobes on the penultimate segment of the abdomen, armed with minute black spines, and with a reddish spot at their base. The eyes are sub-contiguous in the males, and widely separated in the females. The thorax is bristly, of a darkish grey colour, with a central and two narrow irregular lateral black stripes; the sides are cinereous. The abdomen is hairy, light grey, with an interrupted longitudinal dorsal stripe; the portions of which are often dilated into triangular spots. The legs are furnished with many hairs and bristles, but the hind tibiæ have few or none on their inner sides. The females have the thorax and abdomen coloured and marked in a similar manner to those of the males, the latter part is conical with a pointed apex.

Generally distributed. Size, from 6 to 7 mm. (about 3 lines).

I believe that this species has been confounded with *C. varicolor*, Meig., a British specimen of which I have not yet seen. The latter (of which I possess a typical example named by Rondani) has the abdomen laterally compressed, and destitute of the large sub-anal lobular appendages.

C. TRAPEZINA, Zett.

This bears a considerable resemblance to *C. impudica*, but is darker in colour than that species, less hairy, has the abdomen of the male more depressed (less cylindrical), with smaller ventral lobes without a red spot at their base, and is marked along the dorsum with a series of triangular or sub-quadrate black spots. The thorax has three black stripes, which are nearer together than those in *C. impudica*, and there are often two lateral ones in addition.

The hind tibiæ of the males are armed with three or four bristles in the middle of their inner surfaces.

The female is lighter in colour than the male, and often has both thorax and abdomen almost immaculate.

Not uncommon.

C. CINEREA, Fall.

This species is characterized by its grey colour and almost immaculate thorax. The face is rather prominent, that of the female being more so than that of the male. The abdomen in the latter sex is sub-cylindrical, somewhat flattened, clothed with numerous black hairs, and showing dark reflections when viewed in some directions; it has also a narrow sub-interrupted dorsal stripe, and tapers a little towards the apex, which is round, projecting, and of a grey colour, with two hairy lobular appendages on its under-surface. The legs are long and spinose; the hind tibiæ of the males being armed along their inner sides, for nearly their whole length, with a series of short stiff hairs, of sub-equal lengths.

The female has the thorax often marked on its front margin with two narrow brown stripes, placed near together. The abdomen is conical, pointed, mostly unstriped, and closely resembling in shape that of the female of *Hydrophora conica.*

The length of this species is usually from 7 to 8 mm. (3 to 4 lin.), the females being mostly the larger. It is not uncommon; the females are much more frequently seen than the males, and are often noticed on the flowers of ***Chrysanthemum leucanthemum*** (the ox eye).

C. CINERELLA, Fall.

This little species has the thorax and abdomen coated with grey dust-like scales (***cinereo-farinosus***); the former is indistinctly striped, except by four dorsal rows of small black bristles; and the latter, which is cylindrico-conical in the males, is marked by a central dorsal line of small triangular spots. The hind femora, as pointed out by Rondani, are destitute of bristles on the basal half of their under-surfaces, and the hind tibiæ are bare on their inner sides.*

*** Rondani also observed that the epistome is very prominent.**

I believe this species to be identical with the *A. pusilla* of Meigen and Schiner. It is not the same as the *A. cinerella* of Meigen, which belongs to the genus *Hylemyia*.

It is not common.

C. SEPIA, Meig.

This small dark fly is characterized by being rather short and thick, with shortish wings, which are nigrescent at the base. It is hairy, with the thorax dark grey, having a central black stripe, which is sometimes indistinct. The face is rather prominent, and the eyes of the males are sub-contiguous. The abdomen in the same sex is black, hairy, thick, and cylindrical, with the apex large and inflexed, having two projecting sub-anal hairy lamellæ. A wide interrupted dorsal band, formed by large sub-quadrate black spots, may be seen in certain lights. I have not seen the female.

This species is usually found in corn-fields, but is not very common; Rondani says that the larvæ live in the culms of wheat and other graminaceæ.

C. BILLBERGI, Zett.

This is an aberrant species, the generic position of which it is rather difficult to determine. Schiner places it along with its congener, *M. sylvestris*, Fall. (of which I have not seen a British example) in the genus *Eriphia* of Meigen. Another genus, of which it possesses many of the characters, is *Pogonomyia* of Rondani; it does not possess, however, the distinctive points assigned by the latter author to the species placed in either of the above genera, for it has the scales of the alulets very small and equal in size, and the anal veins prolonged to the margin of the wings. In the face of these difficulties I have thought it best to place it, at least provisionally, in the present genus.

It may be known by its black colour, its rather elongated form, the approximation of the eyes in both sexes, and the dilatation of the second and third joints of the fore tarsi in the females. The face and epistome are both rather prominent, and the latter is furnished with numerous bristles. The eyes are sub-contiguous in the males, and only slightly more separated in the females. The antennæ are rather short, with the second joint setose; the arista is bare and thickened at the base. The thorax is of a shining blackish-grey colour, with whitish shoulders and sides. The abdomen in the male is cylindrico-conical, hairy, cinereous, with a central dorsal longitudinal black stripe; it has the apex rounded, projecting, shining black, hairy beneath, and furnished with two moderate-sized sub-anal lamellæ. In the female the abdomen is black, shining, immaculate, rather depressed, and with a pointed apex. The legs of the female are peculiar in having the second and third joints of the fore tarsi somewhat dilated.

Zetterstedt appears to have confused the sexes together, for he says, "Abdomen in utroque sexu ovato-lanceolatum, sub-depressum apice acutum," which only applies to the female, and he has made the mistake of attributing the possession of the dilated tarsal joints to the male, an error into which Schiner has also fallen.

This is an Alpine species. I found several specimens of both sexes in May, 1875, in the woods upon the summit of one of the lofty hills surmounting the ruins of Bolton Abbey, in Craven, Yorkshire.

(*To be continued*).

NATURAL HISTORY OF *ENDOTRICHA FLAMMEALIS.*

BY WILLIAM BUCKLER.

While engaged in studying *flammealis* from the egg to the perfect insect, it has been my good fortune again to be associated with Mr. Wm. R. Jeffrey in the deeply interesting task, who not only at the beginning supplied me with ova, but subsequently with the most favoured and promising of his larvæ, on occasions, and at a very critical period when failure seemed almost inevitable, and for his kind and invaluable assistance my grateful thanks are here recorded.

I received the eggs on 28th of July, 1881, about a dozen of them being laid deep among the long hairs in the axils of the flower and stalk of *Lotus major*, fourteen on leaves of *Corylus avellana*, five on a spray of *Melampyrum pratense*, and one on a leaf of sallow.

The eggs hatched in the morning of 7th of August, and the young larvæ were supplied with leaves of all the above mentioned and a tender young leaf of oak in addition ; at the end of three days the softest of the hazel leaves showed a decided preference had been given to them by the tiny larvæ, though the *Lotus* had also been eaten, but of the other leaves only the oak showed any trace of attack, and in so slight a manner that it was not tried again for some time.

At the end of a week many were laid up for their first moult, and this operation was not completed until the 17th, when the needful changing of food became a hazardous piece of work, and proved fatal to a few of the larvæ.

Two individuals more forward than the others got over their second moult on the 26th, while their companions lay waiting for their turn, and by the time they had completed their change of skin I became unpleasantly aware of having no more than eight larvæ in all remaining.

The third moult happened with one larva on the 8th of September, and to the remainder on the 11th to 13th, and while changing their food next day my long growing suspicion of cannibalism was verified —for, just as on previous occasions, another larva was missing, and on my scrutinizing what seemed a cast skin, it proved too surely to be the remains of a larva, in great part devoured, and I had no doubt of the culprit being that one which had moulted soonest, it having slain its victim while helplessly laid up.

Hitherto, while changing food, I had occasionally noticed a dead larva in a suspicious condition, but they were too few to account for the number of mysterious disappearances which began after the first moulting and continued at intervals; their propensity was now noticed by Mr. Jeffrey, who reported finding one of his larvæ badly bitten, and mine presently being reduced in number to six, I took the precaution henceforth, to keep each separate.

After this they continued to feed a little, as evidenced by ravages in the food and by small heaps of frass, at intervals; although they always seemed to me to be sleeping away their time as though it was of no importance whatever, and their growth was most remarkably slow, though singularly enough, Mr. Jeffrey succeeded in bringing one of his brood—but only one—to full-growth by 5th of November, when he very kindly sent it to me to watch, to figure, and note, and on the 10th it spun up; but as no other of his nor any of mine could be induced to follow this example, and as the proper time for any further moult had long expired without the occurrence, and cold weather coming, I unwillingly saw they intended to hibernate, and feed up in spring; and this really proved to be the case, for, with the above-mentioned single exception, none became full-fed much before the end of May, 1882.

The perfect insects, male and female, eight in number were bred by Mr. Jeffery, and three also by myself, from June 29th to July 11th.

The egg of *flammealis* is a longish-oval is shape, rather large for the size of the insect, the shell, minutely pitted on the surface, is whitish and glistening; it adheres to the substance whereon it is laid either on its side or standing on end, as well also to each other when laid in little clusters, and I found after six days it was very faintly tinged with greenish and in four more days it hatched.

The newly-hatched larva is very slender, translucent, and so slightly tinged with flesh-colour as to be almost white, with grey-brown head and narrow plate on the second segment; on the third day after feeding on hazel the body is tinged internally with crimson, or if fed with the flower and leaves of *Lotus major* only, the internal vessel is tinted with bright green, and in either case the head and narrow plate are of a deep bright red; it nibbles away little holes quite through the leaf at some time or other during the first twenty-four hours, from either the upper or under-surface, but is soon after to be found on the under-side where it has spun for itself a little web of such delicate gossamer as to be hardly visible on the hazel leaf, or in the flower and leaflets of the *Lotus*.

After the first moult it is still slender, the head and plate are dark reddish-brown, the skin of the body less translucent, though still tinged with red from the interior, and now, by help of a strong lens, two rows of most minute brown dots can just be discerned on the back; the narrow silken somewhat tubular hammock is extremely thin and of pale brownish colour, wherein the occupant lies curled up motionless, and might be very easily overlooked without arresting notice as a larva.

After the second moult it is grown but little, and seems very much as before, except that the skin of the body generally is more opaque, and bears a faint tinge of bluish-green above and a paler tint of greenish-drab below, the dark red head is followed by the darker brownish red plate, and a very small dark plate appears on the anal flap, the brown tubercular dots are more noticeable; it seems always at rest in a close coil, either at one end or in the middle of its long transparent brownish web, and if turned out of its abode to examine is very timid, seldom uncoils, and for a long time is afraid to move; though not detected either by Mr. Jeffrey or myself in the act of feeding, yet, that it feeds well, probably at night, is shown by portions eaten out from leaves of hazel and *Lotus major*, and also, as Mr. Jeffrey advised me, from tender leaves of *Agrimonia eupatoria*, sallow, and hornbeam.

After the third moult the skin is quite opaque and of a dark chocolate-brown colour above, a very dingy pinkish beneath, the head rather widest in front near the mouth and a trifle flattened, is of brownish-red colour, the plate on the second segment is broad, blackish-brown, and for a time appears dorsally divided, the small anal plate is of the same dark colour, the tubercular dots are rough, blackish, and ranged on either side of the back longitudinally *in a straight line with each other*, each dot bearing a fine hair; a most remarkable addition occurs a little below these on either side nearly close to the beginning of each segment beyond the thoracic, in that of a small ocellated crater-shaped spot with dark brown centre bearing a hair, other rough dark dull dots, similar to those on the back, occupy the usual tubercular situations along the sides and ventral region, the fifth and sixth segments on the belly have a transverse series of these close together: the grey-brown web it spins for its dwelling amongst the leaves now arrests attention from its curious construction, as when seen while the twigs are in an upright position, the web is partitioned off into several cells or chambers, one above the other, by delicate diaphragms or floors, so to speak, varying in number, but often as many as from three to five, openly wrought and with fine connecting threads, the larva occupying sometimes one chamber sometimes another, almost always in its characteristic posture with the tail curled round either across the second segment or over the head; if turned out it feigns death for a long time, but when once it recovers from its fright it nimbly advances or retreats backwards in efforts to escape.

By the 19th of September, it is 12 mm. long, and is in a state of transition from its previous habit of eating growing leaves, which, as autumn advances, gradually die, and it accustoms itself by degrees to feed on those leaves of sallow and hazel, or of hornbeam, that are getting more discoloured and softened with blotches of incipient decay before falling, thus it acquires the changed habit of feeding on decaying leaves, although it will yet, for a short time, occasionally vary its diet by eating a small portion from a green privet leaf, or even a small oak leaf if very tender, though at no time does it seem to really like either, and very soon it entirely rejects those leaves that may still linger in a comparatively green state.

The changed quality of its food seems to affect the colouring of the larva, for, by the end of September, it is of a dark purplish-brown more dingy than before, the previous dorsal division on the neck-plate has disappeared and the plate is now wholly black and shining, and it is altogether quite in harmony with its surroundings on the earth, where in a state of nature it would be, during winter, in the midst of fallen leaves of various kinds, and sure to find some with the requisite qualities of moisture and tenderness agreeable to its taste, and with these most probably it would not be very particular in its choice.

After hibernation and when full-grown the larva is from 16 to 18 mm. in length, its proportions are rather slender as far as the sixth segment thence gradually thickening towards the ninth, then as gently decreasing to the end of the eleventh, and more tapering to the end of the thirteenth, the head is a trifle narrower than the second segment, the third and fourth have deepish and sub-divided wrinkles, the remainder are well divided, and each is on the back sub-divided in the middle by *two deep wrinkles very close together*, a distinguishing character from a very early stage, the front sub-division of the thirteenth is long and the anal flap short, the ventral legs are small, the stouter anal pair extended backwards, the tubercular dots are as before but not a trace can be seen of the crater-shaped spots before mentioned, they are obsolete, the fine rugosity which had previously made the skin so dull is now much smoothed away, the general colouring too is rather less dark on the back and sides, the spiracles are round and black but so minute as only to be seen with help from a powerful lens, the head is rather darker than before, the papillæ pale and translucent, the collar plate blackish-brown, all the legs pale greyish-drab and rather transparent, the anal plate is blackish on the front and side margins, brownish-grey behind, the belly has a brownish-ochreous tinge and somewhat of this modifies the darker chocolate-brown of the back, assimilating well with the few old decaying leaves in spring that can yet be found lingering on in the haunts of the insect.

The cocoon, formed by the larva that was prematurely full-fed, on withering leaves of sallow, on the 10th of November, was of a roundish oval figure, composed of greyish-drab coloured silk, spun on the under-side of one of the leaves and joined in part to another, the silken surface exposed to view became in course of the night following finished off with a number of small particles of greenish leaf sprinkled irregularly over it, and adhering, gave just the speckled aspect the under-side of the sallow leaf presented so often at that time, both leaf stalks were fastened to the twigs with thick moorings of silk, and one end of the cocoon being attached to the vessel wherein it was kept for observation, seemed suggestive of an innate habit under favouring circumstances of securing the cocoon to some fixed object; a day later it became needful for its removal to sever this attachment, causing a hole, exposing much of the larva to view and allowing me to note its already changing colour, but it was quite equal to the mishap, for within a few hours it spun a quantity of silk over the hole and prevented any further observation.

The above exceptional instance induces me to add that all the other larvæ of *flammealis* remaining alive in spring spun themselves up during the last few days in May, both with Mr. Jeffrey and myself, and that one of mine was in an oval cocoon of 13 by 6 mm. diameters, covered with particles of earth and of dead leaf, half sunk in the soil and attached to a dead leaf lying on the surface above with other leaves matted together; another cocoon had but little earth in its covering, and was chiefly composed of decayed leaf of hornbeam and hazel, situated partly within a curled-up leaf of the former kind to which and to a little moss it was fastened: another, was a most clever adaptation of the lower part of a dead sallow leaf with foot stalk remaining, the edges of the leaf having been drawn round to meet, and fastened with silk formed a hollow cone, which at the open end had been stopped with grey-brown silk and the interior smoothly lined with similar material; in this the old larval skin lay next the foot stalk at the pointed end, and the tail of the pupa next, altogether 15 mm. in length.

The pupa itself is 8¼ mm. long, its general figure very much of ordinary form, the head and eye-pieces moderately well developed, the thorax well produced, with distinct sub-divisions, is slightly keeled, the hind margin on either side strongly prominent, and convexly sloping downward to the central point or end of the keel, the wing-covers slant off towards the ends of the antennæ and leg-cases which are long, the movable rings of the abdomen have a punctate surface, but are smoothly cut at the divisions, the spiracles rather prominent especially the largest on the twelfth, the abdominal tip is a little prolonged, rounded and furnished with two longish curly-topped bristles surrounded with four others of shorter lengths; its colour is very dark mahogany-brown approaching to blackish at the anal tip, and with a glossy surface.

Emsworth: *November* 10*th*, 1882.

[The mystery surrounding the transformations of *Endotricha flammealis* has been simultaneously dispelled by the independent observations of investigators of different nationality. At the meeting of the "Société Entomologique de Belgique," held on the 7th October, 1882, Dr. Heylaerts read a description of the larva and its habits, as observed by him in Holland; it is not so detailed as Mr. Buckler's, and there are certain small discrepancies between the two, but the results are practically the same.—EDS.]

ADDITION TO THE BRITISH FAUNA OF A NEW GENUS AND SPECIES OF *HEMIPTERA-HOMOPTERA*.

BY JOHN SCOTT.

In the beginning of August last, in company with my friend Mr. Bignell, I paid a visit to a little meadow near to a place called Cann-quarry, in the direction of Bickleigh Vale, where he had often been before, in search of parasites, and I, for the first time, in the hope of picking up some rare or new species of the spring-heeled *Psyllidæ*. The weather was all that could be desired, and our hopes of success were, on this account much heightened. But "the best laid schemes o' mice an' men, gang aft agley," and we found that the insects, at least the kinds we were in search of, seemed to have deserted the locality, as we worked on for a considerable time without any luck falling to us. At last Mr. Bignell called my attention to a Homopteron he had just swept into his net, but from what plant he was unable to say. It was speedily boxed, and we went on sweeping and beating for more. After a long interval he took a second specimen, and said he thought he had got it off the fern (*Pteris aquilina*) which grows abundantly there. So, setting to work to try and establish the fact, I soon pronounced for it by the capture of several individuals.

A day or two afterwards we paid a visit to Shaughbridge, a magnificent piece of mountain scenery in the same neighbourhood, and where the fern grows even more thickly than at the former place; but here we were doomed to utter disappointment, probably owing to the great quantity of the plant and the less open nature of the ground in consequence, for after beating and searching about for hours, we were not favoured with even a glimpse of the insect. There was now nothing left for us to do except again to visit the first locality. This we did in the course of a day or two, and I had the pleasure of taking a goodly number, principally females. Neither a *Psylla* nor a *Trioza* passed into my bottle, but I was equally gratified with the capture of the insect about to be described.

PLATYMETOPIUS, Burm.

Head: crown (without the eyes) pentagonal, apex acute, sides next the eyes shortest; anterior sides slightly convex, about as long as the length down the centre; posterior margin slightly concave; disc slightly concave or reflexed at the apex: *eyes* placed on the sides of the head; viewed from above spherical triangular; outer margin continued in the same curve with the anterior sides of the crown, and extending posteriorly for a short distance beyond the posterior margin: *face*, between the antennæ, at least one-fourth less than the length down the centre; sides slightly narrowing towards the base of the clypeus: *clypeus* obtusely angulate at the apex. *Antennæ* placed in a deep cavity above the middle of the eyes; 1st and 2nd joints stout.

These are the principal characters which seem to separate the present genus from that of *Deltocephalus*, to which it is very closely allied; Burmeister being the first to characterize the genera in his Gen. Ins. (1838).

PLATYMETOPIUS UNDATUS.

Cicada undata, Deg., Mém., iii, 119, 5, t. 11, fig. 24; Fall., Hem. Suec., ii, 29, 7; *Cicada vittata*, Fab., E. S., iv, 35, 33; S. R., 67, 23 (*nec* Linn.); *Jassus vittatus*, Germ., F. I. E., 7, 20; *Jassus (Platymetopius) undatus*, Flor, Rhyn. Livl., ii, 221; Kirschb., Cicad., 147, 127; *Platymetopius undatus*, Fieb., Verh. K. K. z.-b. Ges., xix, 202, T. 6, fig. 64; J. Sahlb., Cicad., 296, 1; *Jassus (Platymetopius) undulatus*, Thomson, Opusc. Ent., i, 46, 1.

Bright lemon or canary-coloured, shining. *Head: crown* chocolate-brown, more or less thickly and finely spotted with yellow; anterior sides narrowly yellow; extreme margin with a minute puncture near each eye: *frons, face, cheeks, clypeus*, and *rostrum*, yellow, apex of the last narrowly black. *Antennæ:* cavity black; three basal joints yellow; *setæ* brownish.

Thorax: pronotum chocolate-brown, very finely but irregularly spotted with yellow; lateral margins yellow. *Scutellum* chocolate-brown, very finely but irregularly spotted with yellow; beyond the middle a narrow transverse channel curving round posteriorly near its extremities; apical portion cordate, finely wrinkled transversely. *Elytra* bright lemon or canary-coloured yellow, shining, with a broad, chocolate-brown, longitudinal streak next the suture, extending to the apex, its outer edge waved, or with two bays forming a ∧∧-shaped character; *clavus* next the suture, with three minute, almost equidistant, white spots, generally bordered with black; *corium*: the three central ante-apical areas with a minute white spot in each near to their extremities, immediately opposite to which are three others in the apical areas. *Legs* pale yellow: *tibiæ*, margins of the 3rd pair with long, spinose, yellow hairs, each set in a minute dark chocolate-brown puncture: *tarsi* pale yellow, apices of the joints very narrowly chocolate-brown: *claws* dark brown.

♂. *Abdomen*, above, black, side margins yellow; underneath bright yellow; base with a small, black trilobate patch in the middle; genitalia, above, black, underneath, yellow. Length, ♂, 2—2½ lines; ♀, 2½—3 lines (Paris).

In his "List of British Hemiptera, &c.," Walker gives *Deltocephalus vittatus*, Linn., citing Germar's figure of *Jassus vittatus*, which, as above indicated, represents *C. undata*, Deg., but there is no record of the capture of the latter in Britain until now, although the species is distributed throughout Europe. *C. vittata*, Linn., is our *Eupteryx vittatus*.

Lewisham: *5th November*, 1882.

CONTRIBUTIONS TO A KNOWLEDGE OF THE RHYNCHOTAL FAUNA OF SUMATRA.

BY W. L. DISTANT.

The following descriptions refer to species which I have received during the last few years in collections made by Messrs. Forbes and Bock. The collection of *Rhynchota* is evidently a pursuit which is by no means a speciality of those gentlemen, as the small and obscure representatives of the Order are almost entirely unrepresented in their consignments, which have consequently added less, than might have been expected, to our knowledge of this little-known fauna. Our present information as to the *Rhynchota* of Sumatra is greatly due to Snellen van Vollenhoven, whose studies, however, did not extend to the *Coreidæ* of this island; to Ellenrieder, who alone treated of the *Pentatomidæ*; to various descriptions by the late Dr. Stål; and the same, in a much less satisfactory sense, of the late Mr. Walker. It will be thus seen that, at present, our catalogues and collections of Sumatran *Rhynchota* are of the most meagre and superficial character, though we may reasonably hope that this comparative ignorance will soon be greatly modified by the publication of the Natural History section of the late Dutch Expedition into Central Sumatra: one volume of this section, under the editorship of J. F. Snelleman, has already appeared at Leyden, and contains notices of the *Coleoptera*, *Diptera*, *Neuroptera*, &c.

HEMIPTERA-HETEROPTERA.

Fam. PENTATOMIDÆ.

Canthecona cognata, *n. sp.*

Very closely allied to *C. javana*, Dall., and in general appearance perfectly resembling that species, but differing in having the produced lateral angles of the pronotum almost straight, and not curved and directed forwardly, and with their apices obtusely and not long and acutely spinous as in the Javan species.

Length, 13 mm. Breadth of angles of pronotum, 8 mm.

Hab.: Sumatra (Forbes).

NEOSALICA, *n. gen.*

Antennæ five-jointed, third joint very small, the basal joint distinctly passing apex of head. Pronotum with the anterior angles rounded, the lateral margins carinate and sub-erect, the anterior portion rounded, sinuated about centre, the lateral angles produced in straight acute spines, the posterior margin ampliated and produced over base of scutellum. Scutellum longer than broad, the apex rounded, and slightly passing base of membrane, and with a distinct central longitudinal carinate line. Corium with the apical margin very strongly sinuated. Abdomen with the connexivum extending beyond margins of corium, segmental basal angles produced and spinous. Rostrum extending a little beyond anterior coxæ. Metasternum with a central sub-triangular keel, of which the basal angles are sub-produced, and the apex narrowed and extending to intermediate coxæ. Mesosternum with a slightly raised, narrow, triangular keel, the apex of which is very narrow, and reaches anterior coxæ, and the base very prominently raised in a transverse ridge between the intermediate coxæ. Femora slightly thickened, the tibiæ sulcated.

Neosalica is allied to *Piëzosternum*, especially to that form of the genus represented by *P. excellens*, Walker, for the reception of which that author proposed a new genus, "*Salica*." It is easily distinguished by the sternal keel not being produced beyond the intermediate coxæ.

Neosalica Forbesi, *n. sp.*

Obscure ochraceous; antennæ, lateral margins of the head with the inner margins of lateral lobes, lateral margins of pronotum, base and apical margin of scutellum, connexivum, and stigmata black; apical portion of fourth joint of antennæ, a rounded callosity at each basal angle of scutellum, a small sub-quadrate spot on each segmental lateral margin both above and beneath, margins of stigmata, acetabula and apex of anal appendage, luteous; membrane bronzy, with the apical margins pale, the apices broadly so; body beneath pale castaneous, the disc of abdomen, longitudinally and faintly piceous; rostrum and legs dark castaneous; abdomen above green, the apex castaneous. Antennæ with the second and fourth joints sub-equal in length, first and fifth also sub-equal, and longer than third; posterior portion of pronotum and base of scutellum transversely wrinkled, the pronotum and scutellum with a distinct, central, carinate, longitudinal line; membrane with the veins very prominent. Length, 20 mm. Breadth of angles of pronotum, 11 mm.

Hab.: Sumatra (Forbes).

Fam. PYRRHOCORIDÆ.

Lohita grandis, Gray, *var. sumatrana.*

This variety differs from typical specimens of Gray's species in having the apices of the intermediate and posterior femora unicolorous and not distinctly red, the discs of both anterior and posterior pronotal lobes black; clavus, excepting base and apex, black; scutellum wholly black; the discal spot on corium, and the coxal spots on sternum, very much larger, and the general colour reddish-ochreous, and not sanguineous.

Hab.: Sumatra (Forbes).

This appears to be a very distinct race, and at first I was inclined to consider it as another species, from the relative lengths of the antennæ and rostrum. I, however, fortunately possess a long series of both sexes of Gray's species from N. E. India, and, to my surprise, find that the lengths of both the antennæ and rostrum are of a very variable nature.

Fam. REDUVIIDÆ.

Panthous cocalus, *n. sp.*

Pale sanguineous, shining; head, rostrum, antennæ, apical angle of corium, apex of abdomen, a spot at middle of intermediate femora, an annulated fascia near middle, and apex of posterior femora, tibiæ, excepting basal third, tarsi, some irregular spots on connexivum (both above and beneath) and membrane, black; disc of posterior lobe of pronotum, about basal third of corium, and disc of abdomen, fuscous; basal joint of antennæ with two pale ochreous annulations, apex of membrane pale fuscous hyaline. The basal joint of antennæ is about half as long again as head, anterior lobe of pronotum sub-prominently tuberculated, posterior lobe with the lateral angles prominently and sub-acutely produced; femora and tibiæ distinctly pilose and nodulated; membrane extending considerably beyond the abdomen. Length, 29 mm. Breadth of angles of pronotum, 9½ mm.

Hab.: Sumatra (Forbes).

This species is allied to *P. Dædalus*, Stål, and *P. nigriceps*, Reut. It agrees with the first in size, but differs by the colour of the corium, the annulated posterior femora and the strongly nodulated legs; it agrees with *P. nigriceps* in the general markings of the corium, but is considerably larger in size, and also differs from that species by the different coloration beneath, the apices of the femora not "pallidius lurido-flaventibus," &c.

Panthous talus, n. sp.

Dull, dark reddish-ochraceous; connexivum, abdomen beneath, apical thirds of intermediate and posterior femora, intermediate and posterior tibiæ, and apices of anterior tibiæ, tarsi and antennæ, black; apex of abdomen, apex, and four small rounded spots on margin of connexivum, membrane, and two annulations to basal joint of antennæ, pale ochraceous. The anterior lobe of the pronotum is tuberculated, two tubercles on each side of base being very prominent, posterior pronotal lobe very coarsely rugose, the lateral angles sub-prominent; legs strongly nodulated and pilose. Length, 20 mm. Breadth of angles of pronotum, 7½ mm.

Hab.: Sumatra (Forbes).

This species is allied to *P. Icarus*, Stål, from which it differs by the colour of the legs, the considerably greater width of the pronotum, the more robust and strongly nodulated legs, &c.

HEMIPTERA-HOMOPTERA.

Fam. CICADIDÆ.

Dundubia Bocki, n. sp.

♂. Head and thorax, above, dull ochraceous or olivaceous; abdomen, above and beneath, castaneous. Head, with the area of the ocelli, black; eyes castaneous, speckled with ochraceous. Pronotum with two small black spots at centre of anterior margin, the lateral and posterior margins somewhat paler, the last inwardly and outwardly narrowly bordered with black. Mesonotum with two central, contiguous, obconical spots, their bases situate on anterior margin, the outer margins very pale and bordered outwardly (at base) and inwardly (broadest at apex) with black; four sub-basal black spots, situate one on each side of the anterior angles of the cruciform elevation, which is somewhat paler. Tympana ochraceous. Head beneath, rostrum, sternum, legs, and opercula ochraceous; apex of rostrum black; anterior tibiæ, bases, apices, and a sub-apical annulation to intermediate and posterior tibiæ, fuscous. Tegmina and wings pale hyaline; tegmina with the veins and costal membrane dull ochraceous, and the claval area inwardly margined with dark fuscous; wings with most of the veins dull ochraceous, a few being fuscous. The body is elongate; the head, including eyes, a little narrower than base of pronotum; the face is prominent and globose, transversely wrinkled, and with a deep and broad longitudinal sulcation on disc; the rostrum reaches the middle of the posterior coxæ; the opercula are long, reaching the fifth abdominal segment, they are sinuated and narrowed on each side near base, and at the region of the tympana, and are then widened and rounded on each side, the apex being broad and rounded.

Length, 44 mm. Expanse, 123 mm.

Hab.: Sumatra (Bock).

This species is allied to *D. radha*, Dist., from which it is structurally differentiated by the very much shorter abdomen, and by the broadly rounded apices of the opercula.

Fam. CERCOPIDÆ.

Cosmoscarta Juno, n. sp.

Black, shining; abdomen above, rostrum, legs, a few scattered spots on abdomen beneath, and anal appendage, red; apex of rostrum and femora, excepting bases and apices, piceous; ocelli large and bright shining yellow; eyes dull ochraceous; reticulations on apical third of tegmina distinctly pale and shining brownish. Wings smoky-hyaline. Pronotum thickly and finely punctate, the lateral angles broadly and sub-acutely ampliated, the lateral margin broadly ampliated and reflexed, the posterior margin truncated at base of scutellum. Tegmina very finely and thickly punctate, the costal margin at base, suddenly and broadly dilated, rounded, and sub-erect, the apical reticulations strongly defined. Legs setose; posterior tibiæ with a strong sub-apical spine on outer margins.

Length, 17 mm. Exp., 50 mm. Exp. of angles of pronotum, 10 mm.

Hab.: Sumatra (Forbes).

This species is allied to *C. viridans*, Guér., from which it differs by the more strongly dilated pronotum, the tegmina with the costal margin suddenly ampliated, arched and sub-erect at base, the reticulations of the tegmina not concolorous, the different colour of the abdomen, &c. The tegmina, though shining, are less brilliantly so than in Guérin's species.

East Dulwich: *November*, 1882.

Coleoptera, &c., at Ventnor.—During a short stay at Ventnor at the end of last April and the beginning of May, I found a few insects: the season was rather further advanced than it has been for some years, but the bad weather prevented much work from being done, besides spoiling the localities for the few fine days that intervened. One fine warm morning I found the large stones on the beach on the west of the town, under and above high water mark, covered with beetles that had come up from the rotting seaweed underneath. *Homalota plumbea* was most abundant, accompanied by *Ptenidium punctatum*, *Phytosus spinifer* and others; unfortunately a cold wind sprung up, and in a few minutes all were gone. On the beach I found two specimens of *Homalota princeps*, a single specimen of *Bledius atricapillus* (which also occurred at Luccombe Chine), and *Bryaxis Waterhousei*, besides other species I have before recorded from the locality. *Lithocharis maritima*, which I generally find in some numbers, was extremely scarce, and *Trechus lapidosus* was represented by a single specimen.

On and about the cliffs, at the roots of plants, several good insects were to be found; the most noticeable of these was *Ceuthorhynchideus Dawsoni*, this was attached entirely to *Plantago coronopus*, and literally swarmed, some plants having 20 or 30 specimens at least on them: they drop immediately the plant is touched and lie motionless; owing to their minute size and the exact resemblance they bear to the ground underneath, they are very easily passed over entirely, even where most abundant; at roots of *Anthyllis*, *Daucus*, and other plants I also found *Otiorhynchus scabrosus*, *Orthochætes setiger*, *Tychius lineatulus*, *Corticaria curta*, *Corylophus cassidioides*, &c. A single specimen of *Baris laticollis* turned up on a wall in the town.

On and about the undercliff *Aphthona venustula* was plentiful on *Euphorbia*, and *Batophila ærata* swarmed on every hawthorn bush. I also took *Thyamis dorsalis*, *Phyllotreta nodicornis*, and other *Halticidæ*, *Pogonochœrus dentatus*, *Adimonia sanguinea*, *Sitones ononidis*, *Atomaria fumata*, and others, but nothing like what one might have expected from the locality and time of year.

At Sandown the cliffs had been thoroughly washed by heavy rain, but underneath grass and *débris* at their foot I found a single specimen of *Cathormiocerus socius*, some common *Trachyphlœi*, *Oxytelus insecatus*, *Dermestes undulatus* and other species. At roots of *Anthyllis*, a little way up the cliff, I found a single specimen of *Otiorhynchus ligustici* (thanks to Mr. Blatch, who told me the exact locality). Among *Hemiptera* I found *Coreus scapha* in abundance and two specimens of *Podops inunctus* occurred in an ants' nest: besides *Solenopsis fugax* (recorded *ante* p. 139), the only Hymenopterous insect I noticed, of any consequence, was *Andrena pilipes*.

In a marshy hollow surrounded by willows not far from Brading which I worked for a few minutes, I found several good things, such as *Hypera suspiciosa*, *Plectroscelis subcœrulea*, and *Thyamis Waterhousei*. *Cercus pedicularius* was in great abundance: this place looked to me one of the best localities in the island, it is on the left of the road leading from the Roman Villa to Newchurch, about a mile from the former.

Carabidæ were very scarce, all common species, and these occurred sparingly. *Harpalus rubripes*, which is generally a pest, was found with difficulty, and *H. caspius*, *azureus*, and *serripes* occurred almost singly. The *Stenolophi* were represented by one specimen of *S. meridianus*, and the *Dromii* by *Blechrus maurus*: the better undercliff species seemed entirely absent.—W. W. Fowler, Lincoln: *November* 15*th*, 1882.

Coleoptera at Mablethorpe.—The sand-hills which line the Lincolnshire coast at Mablethorpe are, at certain seasons, very prolific in *Coleoptera*. While visiting in that neighbourhood in June, and again in October last, I spent a few days along the coast, and took, among many others, the following *Coleoptera*:—*Hydnobius punctatissimus*, ♂ ♀, this insect is of rare occurrence; *Corticaria Wollastoni* and *crenulata*, *Choleva sericea*, *Stenus subæneus*, *Tachyusa flavitarsis*, *Thyamis suturalis*, *Othius melanocephalus*, *Scaphidema æneum*, *Trechus obtusus*, *Dromius melanocephalus*, *Saprinus metallicus*, *Anomala Frischii*; also one of the rarer *Anisotomæ*, and others not as yet determined.—H. Bedford Pim, 2, Crown Office Row, Temple: *November*, 1882.

Anthicus bimaculatus, Ill., near Liverpool.—It may interest some of the readers of the Ent. Mo. Mag. to know, that I had the good fortune to capture a specimen of the above rare beetle on April 29th last, on the Crosby Sandhills, where it was crawling on the bare sand in a hollow, sheltered from the gale which was blowing a the time. I was undecided as to its being this species, until it was returned to me as such by the Rev. W. W. Fowler. This species has occurred very rarely at Wallasey, but, as far as I am aware, this is the first record of its capture on the Lancashire side of the Mersey.—JOHN W. ELLIS, 101, Everton Road, Liverpool: *November 9th*, 1882.

Halictus cylindricus carnivorous.—The following observations on this apparently abnormal habit of the male of the above species may probably prove interesting to Hymenopterists, as neither Mr. Saunders nor Mr. Bridgman has seen or heard of such before, and I myself, after about forty years' collecting and observing, have never before met with anything of the kind, and can find no record or observation to the effect that *Halictus* or any of the *Anthophila* are carnivorous. At the same time there is nothing, so far as I am aware, in their structure to prevent their catching and masticating insects, or if not exactly the latter, tearing them to pieces with their formidable pincer-like jaws and sucking their juices, indeed, their oral apparatus would seem more adapted to this mode of living than that of feeding on the pollen and nectar of flowers; be this as it may, so far as I am able to hear, they appear to have confined themselves to the latter kind of food, still it would scarcely seem extraordinary if they did indulge occasionally in some more substantial kind of food, seeing that on both sides of them (according to our arrangements) we have carnivorous groups, whose habits agree in almost every particular, except the choice of food. Carnivorous habits in one of these nectar and pollen eating insects would seem to be abnormal to the group to which it belongs; but are we sufficiently acquainted with the habits of these insects to pronounce that they are really abnormal? All we can say is, that we have not detected them before; and if habits are to go for anything, this fact would seem to connect the aculeate groups more strongly than has hitherto been done. The following are the circumstances which brought the subject of this communication under my notice:

On August 7th of this year, a botanical friend and myself were out for the day on our respective branches of study and collection, on the cliffs and adjoining fields at Seaton, not far from the well-known landslip. We halted for a few minutes on the side of a hill, where there were numbers of flowers, some new to my friend, and there were also numbers of small insects. I was specially on the look-out for *Hymenoptera*. While standing still, net in hand, I caught several *Halicti*, and I may say, that with the exception of a few *Bombi* about the heads of flowers of the large and conspicuous nodding thistle, *Cnicus nutans*, the insects were all *Halicti* and *Diptera*. I did not, to my surprise, see a fossor the whole day. While standing there in the blazing sun, I caught sight of an insect approaching me with something in its mouth; I struck at it and caught it, and, to my surprise and astonishment, I saw it was a male *Halictus*. I did not then stop to make a critical examination, but put him and his mouthful into a pill box; and, not to mix him with the rest of my captures, I put him into a side pocket, that there should be no mistake. The next morning when I came to examine him, I found that I had captured a male *Halictus cylindricus*, with a fly (*Scatophaga*, not described by Walker in his British *Diptera*), a larva of *Acocephalus* (apparently *agrestis*), and three or four *Aphides*. The head of the fly had been mutilated, but the rest of the body was intact; the larva and *Aphides* have dried up, so that I have not kept them, but the fly I have preserved.

Perhaps this notice may elicit, either from our English collectors of this group of insects, or from some Foreign Entomologist, some corroboration of this, so far as I am aware, single instance of one of this section of the Aculeata being carnivorous.

While on the subject of abnormal (?) peculiarities of bees, I may mention that I have made special observations on *Anthophora acervorum*. A pair, or at most, so far as my observations go, two pairs, had taken up their abode in a cob-wall at the end of my garden. I began to notice them in 1863, and have noted the time of their appearance in our meteorological register each year since that time to the present, with the exception of one year (1878), when I did not see them at all for the whole season. The next year, however, a pair took up their abode in the same place, and have continued since. With the one break mentioned above, the male has always put in an appearance about a week before the female; thus, for 19 years, this law has held good, but this year it was broken, for the female preceded the male by a week—she appeared on March 9th, and the male came out on the 15th.—EDWARD PARFITT, Exeter: *November 6th*, 1882.

Hoplisus bicinctus, Rossi, near Plymouth.—On the 1st August last, between Bickleigh Bridge and the Railway Station, I had the pleasure of taking two females of this rare Hymenopterous iasect. It differs, however, from Mr. Smith's description, in having the fuscous portion of the flagellum extended on to the last apical joint; in having on the scutellum a yellow line, instead of two spots; on the first segment of the abdomen two egg-shaped spots broadly united and covering the upper-surface and nearly the whole of the sides (in fact, it would be better described as a band), instead of two triangular spots; the broad yellow band on the second segment is continued across the venter, the narrow band on the third is not continued across the venter, but is represented by a dot on each side and two in the centre, in one specimen, in the other the central dots are wanting. Mr. E. Saunders describes this insect with two spots on the first segment, and length 11 mm., these are respectively 9 and 9½ mm.—G. C. BIGNELL, Stonehouse, Plymouth: *14th November*, 1882.

Error as to fig-insect from Ficus religiosa.—As accuracy is always desirable, even in minor matters, I beg to point out that in the Report of the Proceedings of the Entomological Society of September 6th, which appeared in the last part of the Ent. Mo. Mag. (p. 144), the fig-insect from Calcutta, referred to as described by me on that occasion, was obtained from the *Ficus indica*, and not from the *F. religiosa*, as stated in that report. Both sexes were forwarded to me, with the figs, by Mr. J. Wood Mason, to whom I have dedicated the species under the name of *Eupristina Masoni*. The female is very remarkable, having a duplex serrate appendage attached to the base of each of the mandibles and exarticulate therewith, the one series furnished with nine teeth, and the other with seven, side by side with each other and connected together at their base. The wings are also entirely different from any allied species. The Australian species from *Ficus macrophylla* has a very long serrate process attached in like manner, consisting of thirty teeth in a single series, closely resembling a carpenter's hand-saw, the large hooked mandible representing the handle. I have named this curious species *Pleistodontes imperialis*. The same species has since been obtained from an evergreen *Ficus*, said to be the *F. austra'is*.—Sidney S. Saunders, Gatestone, Upper Norwood: *November 14th*, 1882.

Notes on the Lepidoptera of Heligoland.—The little British island of Heligoland, in the North Sea, has of late acquired more notoriety from scientific than from political considerations. It has proved to be a sort of half-way house at which the migrations, &c., of European birds can be studied with advantage, and from this cause it has been visited by many of the most noted European Ornithologists; moreover, it has a resident Naturalist in the person of Herr Gätke, who has done much, by his industrious observations, to draw attention to the peculiar ornithological conditions of the islet. Its fame in this induced Baron de Selys-Longchamps to visit it in September, 1880, and being also an Entomologist, he naturally sought and obtained such entomological information as was available. The ornithological results of his visit have been published in the Bulletin de la Société Zoologique de France, vol. vii (1882). To this paper he appends his entomological notes (*Lepidoptera*), and as these are likely to be overlooked by Entomologists, in consequence of the medium of publication, we think it well to call attention to them here. Butterflies (as well as birds) are often migratory, and who knows but that some " undoubtedly British " examples—say of *Vanessa Antiopa*—may have called in at Heligoland *en passant!* The extent of our small possession may be realized by Baron de Selys' own words. He says: " J'ai fait le tour complet de l'île en une heure environ;" and he adds, " Je ne vis que fort peu d'insectes (il est vrai que la saison était trop avancée), seulement quelques *Vanessa urticæ*, *Pieris rapæ*, et les *Libellula vulgata* et *scotica*. Je me demande où vivent les larves aquatiques des Odonates, car il n'y a ni marécages, ni ruisseaux, et l'on n'a d'autre eau dans l'île que celle des citernes et d'un puits."

But Herr Gätke possesses a collection of the *Lepidoptera* of the island, and in it Baron de Selys noticed the following:

**Papilio Machaon* and *Podalirius*; *Aporia cratægi*; *Pieris* **rapæ*, **napi*, and **brassicæ*; *Leucophasia sinapis*; *Colias Palæno*, *Hyale*, and *Edusa*; **Gonopteryx rhamni*; *Polyommatus phlœas* and *Hippothoë*; *Lycæna Acis*, *Arion*, and *Alexis*; *Apatura Iris*; *Limenitis Sibylla*; *Vanessa polychloros*, **urticæ*, **Io*, *Antiopa* **c-album*, **Atalanta*, and **cardui*; *Argynnis Dia*, *Lathonia*, *Aglaia*, and *Paphia*; *Melitæa Didyma*; **Satyrus Semele*; *Melanargia Galatea*; *Pararge Mœra*, *Megæra*, and *Ægeria*; *Cœnonympha Pamphilus*, *Davus*, and *Iphis?*; *Epinephile Janira*, *Tithonus*, and *hyperanthus*; *Hesperia comma*.

Those species to which an asterisk is attached are found nearly every year; the others are only found occasionally (" très accidentellement ").

The following *Sphingidæ* were also noticed, viz.: *Sphinx ligustri*, *convolvuli*, and *pinastri*; *Deilephila galii*, *euphorbiæ*, *Elpenor*, *porcellus*, and *celerio*; *Smerinthus ocellatus*, *populi*, and *tiliæ*; *Macroglossa stellatarum*; *Zygæna Minos*.

Amongst the *Bombyces* was observed the variety of *Spilosoma lubricipeda* known in British Collections as *radiata*, which appears to have become nearly extinct in England.

On two occasions Herr Gätke has taken *Margarodes unionalis* in his garden, reminding one of its occasional sporadic occurrence in England.

Many other *Lepidoptera* must occur (some, indeed, have been recorded in other publications), but the list of Butterflies and *Sphingidæ* is probably tolerably complete. And it is suggestive, inasmuch as many of the species must, of necessity, be migrants. *Zygæna Minos* in Heligoland appears almost incredible, and we might say the same as regards *Colias Palæno*.—EDITORS.

New food-plant for Bombyx quercus.—In the middle of May, observing a small Portugal laurel to be much eaten I looked for the cause, and found a half-grown larva of *Bombyx quercus* on one of its branches. I conveyed it to the house and supplied it with leaves of the same plant. I, after that, introduced it into its feeding cage daily, together with sprigs of whitethorn; but on every occasion have found the laurel eaten in preference to the other plant. Latterly I supplied it with nothing else and it continued healthy and grew well until the 22nd of June, when it became full-fed, spun a cocoon, and changed to the chrysalis state. Thus it remained until the 17th of August, when a fine male imago emerged.—OWEN S. WILSON, Carmarthen: *November*, 1882.

Notes on the season in West Norfolk.—Like many others, I, too, complain of the scarcity of *Lepidoptera*, and especially of *Macro-Lepidoptera*, this season. Several species failed to put in an appearance at all, and others were not observed in their usual numbers. From the very first this scarcity of *Lepidoptera* began to manifest itself. Even the generally common *Hibernia rupicapraria* was quite a rarity, and sallow-bloom seemed almost to have lost its attractive powers, so few were the insects observed at it. As the summer advanced, more species were necessarily met with, but many of them in very limited numbers; the *Eupitheciæ* being especially scarce, and generally late in their appearance. *Eup. pygmæata* I did not see at all, and amongst the few Macros which have been as abundant as usual I note *Coremia quadrifasciaria*, which species seemed to be well distributed and moderately common on tree-trunks in and near woods; *Melanippe unangulata* and *Macaria liturata* have been commoner than I have ever before observed them; *Larentia didymata* was everywhere a pest, and, in some places, *L. pectinitaria* was nearly as plentiful. Sugar, although repeatedly tried, proved of little use; even common *Noctuæ*, such as *Noctua triangulum* and *N. brunnea*, were only represented during the season by single specimens, notwithstanding the abundance of larvæ of these species in the spring. A day on the coast in July resulted in my boxing three specimens only of *Anerastia Farrella*, but, perhaps, I ought not to complain much of this, as the weather was anything but favourable for coast work. *Stathmopoda pedella* turned up in plenty among some old alders, but it was excessively local, being confined to a few trees only. Of *Tortrix Lafauryana* I again secured a fine series, with some curious varieties. Two specimens have the costal blotches united, so as to form one long blotch on the costa. I also succeeded in breeding the species from larvæ feeding between united leaves and shoots of *Myrica gale* (bog myrtle). Two specimens of *Retinia turionana* were dislodged from Scotch fir, and eventually boxed, also a solitary specimen of *Phlæodes Demarniana* flying out of a birch tree met with a similar fate. This specimen occurred some three or four miles from where the last specimen was taken, so that I hope yet to find a spot in which it can be taken more plentifully. A fine series each of *Phoxopteryx uncana*, *P. siculana*, *P. biarcuana*, *P. inornatana*, and *Phlæodes immundana* were obtained, with a few specimens of *P. diminutana* and *P. Mitterpacheriana*, but only a single specimen of *Catoptria juliana*. *Crambus hamellus* and *C. latistrius* turned up in plenty, and *Ephestia passulella* swarmed on the premises of the King's Lynn Dock Company. Larvæ of *Geometra papilionaria* were found on the young shoots of birch in the spring, and a larva, also from birch, produced a fine specimen of *Phycis betulella*.

In conclusion, although I was fortunate enough to take a few good species in considerable numbers this season, the fact still remains that many species which, as a rule, are of annual occurrence here, have been either absent or comparatively scarce. —EDWARD A. ATMORE, 8, Union Street, King's Lynn: *October*, 1882.

Notes on the larva of Lemmatophila phryganella.—While searching for *Tortrix* larvæ in Canaston Wood last July, I found larvæ of *Lemmatophila phryganella* rather commonly, and as the notices of this species in our books are rather brief, I think that details may be interesting.

It seems to prefer woods, though often found in the open country, and I found that the larvæ were principally confined to oak bushes situated *under oak trees* in the woods, so that they had plenty of shade.

The larva, when full grown, is about the size of that of *Peronea hastiana*, and not unlike it, moderately active, nearly cylindrical, but with the second segment smaller than the head. Colour semi-transparent yellowish-white, with a delicate powdery-looking efflorescence. This shows more especially at each division of the segments where there is a fold of the skin. Head chestnut or dark brown, with the margin and jaws darker, dorsal plate freckled with brown, anal plate hardly visible, spots invisible, but hairs rather long and delicate. Anterior-legs whitish, the third pair having each a very singular, shining, semi-transparent tubercle on the outer side, which gives the larva the appearance of having two long bladdery legs. Professor Zeller (Isis, 1846) says that this peculiarity is confined to *male* larvæ. It may be so, but I certainly did not notice its absence in any of my larvæ.

Feeding between leaves of oak united flatly together, eating the inner surface of each leaf in patches, deserting its habitation without apparent cause, and joining together other leaves, and partially gnawing them in the same manner, causing the disfigured leaves to be very conspicuous. When full-fed, it lines a portion of the space between two leaves with shining whitish silk, making a tolerably commodious habitation or cocoon, and there becomes a chestnut-brown pupa, at about the end of July.

My first (a male) appeared on September 30th, the rest (both sexes) from time to time through October. Before November, all had emerged; as the latter is the month in which this species principally flies, I presume that they were slightly *forced*, not, of course, by *heat*—since the species waits for *cool* weather—but by the indoor protection from wet and wind.

I see that Professor Zeller also gives October as the time of emergence. He also describes the ♂ larvæ as having the head and dorsal plate *black*, the ♀ *brown*. This distinction must have been, I presume, in young larvæ. I did not observe it. —CHAS. G. BARRETT, Pembroke: *16th November*, 1882.

NOTES ON NEW BRITISH *COLEOPTERA* SINCE 1871; WITH NOTICES OF DOUBTFUL SPECIES, AND OF OTHERS THAT REQUIRE TO BE OMITTED FROM THE BRITISH LIST.

BY THE REV. W. W. FOWLER, M.A., F.L.S.

(*continued from p.* 126.)

[Owing to a mistake, the words "flown across the channel" were applied, on p. 122, to *C. auratus*, instead of to *Calosoma sycophanta*, a few lines down; I am sorry that so obvious an inversion escaped notice.]

HYDROPHILIDÆ.

PHILHYDRUS SUTURALIS, Sharp.

This species is allied to *P. marginellus*, Thoms., but is larger, with yellow palpi; the clypeus has a yellow spot on each side in front of the eye, and the elytra are dull testaceous, with the suture black. It appears to be very common both in England and Scotland, and collectors will probably find that most of their *P. marginellus* belong to this species, if they examine them; in *P. marginellus*, Thoms., the elytra are of a browner colour, the thorax is darker, the head black and unspotted, and the last joint of the palpi black (Ent. Mo. Mag., ix, 153; Ent. Ann., 1873, 22). There is very great confusion with regard to the synonymy of *P. marginellus.*

Helochares punctatus, Sharp.

This species can hardly be separated from *H. lividus*, Forst.

Anacæna variabilis, Sharp.

This appears to be considered on the continent a variety of *A. limbata*; it is, however, a very good species, and may be distinguished at once by its long oval shape, which is entirely different from that of *A. limbata*. I have taken it in numbers in the New Forest, unaccompanied by the latter species.

HELOPHORUS TUBERCULATUS, Gyll.

This insect may be easily distinguished by its deep black colour, and by the polished tubercular elevations on the second, fourth, and sixth interstices of its uneven elytra. Taken in the Manchester district by Mr. Chappell, and in Yorkshire by Mr. T. Wilkinson (Ent. Mo. Mag., xi, 135, 235).

HELOPHORUS ÆQUALIS, Thoms.

Allied to *H. aquaticus*, but smaller, with the sides of the thorax less rounded, and its surface less closely granulose; there are also other differences, but it would seem very difficult to separate the species from *H. aquaticus*, of which it appears to be a small variety. It appears to be common, and to occur with this latter species. I have taken it at Repton, and near Lincoln (Ent. Mo. Mag., xi, 39).

HELOPHORUS BREVICOLLIS, Thoms.

Said to be allied to *H. granularis*, but distinguished by the sulci of the thorax, and by the elytra being narrower and more pointed at the apex, and having the sides more parallel; the punctures in the striæ on the elytra are finer and closer, and the interstices between the striæ are much narrower and more elevated. Taken at Killarney by Rev. T. Blackburn (Ent. Mo. Mag., xi, 39). I have a Scotch specimen named as *H. brevicollis* for me by M. Brisout, which appears to be very close to *æneipennis.*

HELOPHORUS PLANICOLLIS, Thoms.

Allied to *H. æneipennis*, but rather narrower, with the sides more parallel, and the thorax (as its name implies) flatter; the punctures in the striæ on the elytra are finer and closer, and the interstices are flatter, and a little narrower. Taken in the mountainous districts of Scotland and Ireland, and also in the Shetland Isles (Ent. Mo. Mag., xi, 39).

HELOPHORUS LATICOLLIS, Thoms.

Also belonging to the *æneipennis* group, but distinguished by its broad thorax, which is as wide as the elytra, by its elytra being not dilated behind the middle, but thence narrowed towards the apex, with very strong, almost crenate, striæ, with narrow interstices, and by the long, and sometimes entirely black, apical joint of its maxillary palpi. This very distinct species has been taken in some numbers at Woking, by Dr. Power (Ent. Mo. Mag., xi, 40).

HELOPHORUS STRIGIFRONS, Thoms.

A well-marked species, incapable of being confused with any other except *H. æneipennis* and *H. planicollis*, from both of which it differs in being a little larger, in having the sides of the thorax more regularly rounded, in the broad reflexed margin of the elytra, and in having the longitudinal fovea on the base of the head uniformly narrow. It is probably common (Ent. Mo. Mag., xi, 40).

Sphæridium marginatum, F.

The characters assigned to this species hardly suffice to separate it from *S. bipustulatum*, F., of which it appears to be a variety.

STAPHYLINIDÆ.

LEPTUSA TESTACEA, Bris.

This species rests as British on a single example taken by Mr. Champion out of sea-weed at Whitstable, Kent. It is described as being long, linear, flattened, testaceous in colour, with dark abdomen, very short elytra, and long antennæ. When alive, it has much the general appearance of *Phytosus balticus* (Ent. Mo. Mag., ix, 5).

ALEOCHARA VILLOSA, Mann.

This insect very much resembles *A. grisea*, Kraatz, in general appearance; it appears, however, to come nearer to *A. lanuginosa*, Gr., than to this last mentioned species: it differs in having the 2nd and 3rd joints of the antennæ equal in length; in being flatter, more parallel, and much less shining; and also in the punctuation of the abdomen. Taken in several localities, Newcastle, Braemar, &c. (Ent. Mo. Mag., vii, 275).

ALEOCHARA HIBERNICA, Rye.

This species rests entirely on a single specimen found by Mr. Champion on the top of Slieve Donard (a mountain 2800 feet high, in Co. Down, Ireland). It is of the size and somewhat of the build of *Homalota cambrica*, Woll., but darker, more convex, elongate, and shining, less closely punctured, with shorter antennæ, &c. Its general appearance is not that of an *Aleochara* at all, but it has its anterior tarsi 5-jointed (Ent. Mo. Mag., xii, 175).

Homalota egregia, Rye.

This species, which was introduced on a single specimen taken by Mr. Champion at Caterham, has apparently been since abandoned, as being synonymous with *H. rufo-testacea.*

HOMALOTA DIFFICILIS, Bris.

Near *H. vilis*, Er., but smaller, with shorter thorax and paler antennæ. Taken by Mr. Champion at Staines, Lee, and Arundel, and by Mr. Rye near London (Ent. Mo. Mag., viii, 247; Ent. Ann., 1873, 23).

Homalota æneicollis, Sharp.

This insect can hardly be separated as a species from *H. xanthoptera*, Steph.

HOMALOTA HUMERALIS, Kraatz.

This insect is described by Dr. Sharp as being very near *H. sodalis*, Er., but smaller, with paler elytra and antennæ, and different ♂ characters. Taken by Professor McNab, at Cirencester (Ent. Mo. Mag., viii, 247).

HOMALOTA ATRATA, Mann.

Most nearly allied to *H. gagatina*, Baud. (*variabilis*, W. C.), but rather smaller, shorter, and broader, with the abdomen thickly and finely punctured all over the upper surface. Five specimens taken by Mr. Champion in a marshy place near Lee (Ent. Mo. Mag., viii, 247).

HOMALOTA FIMORUM, Bris.

Very near *H. cinnamoptera*, Thoms., but smaller, darker, rather more sparingly punctured, and with shorter antennæ. Taken by Mr. Crotch, according to Dr. Sharp's belief, in Norfolk (Ent. Mo. Mag., viii, 247).

Mr. Matthews has lately been revising the genus *Myllæna*, and three or four species will have to be added to the British list: the descriptions will appear in his essay on the genus.

Mycetoporus longulus, Mann., and *Mycetoporus lepidus*, Gr.

These species are apparently again united by some continental authorities, and are classed as synonymous with *Mycetoporus brunneus*, Marsh. They seem, however, to have sufficient characters to separate them as species.

Mycetoporus longicornis, Kraatz.

It seems very doubtful whether the characters assigned to this species are sufficient to separate it entirely from *Mycetoporus splendidus*, Grav. It is the var. 2 of this latter insect mentioned by Erichson (Gen. et Spec. Staphylinorum, p. 287).

Quedius fulgidus, Grav.

This species is divided by Thomson into five distinct species, which will be found fully discussed by Mr. Rye in Ent. Ann., 1869, 27. They are as follows:—

Quedius 4-punctatus, Thoms.—Distinguished from the others by having two oblique punctures on each side of the disc of the thorax, by its elytra not being longer than the thorax, and by the 6th ventral segment of its abdomen having four setigerous punctures on each side before the apex. Mr. Rye considers this a good species.

Quedius temporalis, Thoms.—This is the most common form: it is very variable in colour, but never exhibits the deep black body and bright red elytra of the preceding species (in fact, these two species in this point bear a strong analogy to *Mycetoporus longulus* and *lepidus*); its thorax is shorter, with its disc unpunctured on each side; its elytra are longer than the thorax, and the 6th ventral segment has only three setæ on each side.

Quedius fageti, Thoms.—This form is deep black with pitchy-red tarsi, and is distinguished from *Q. temporalis* by its shorter antennæ and elytra, and by other minor differences. It appears to be the smallest of the forms. I have taken several specimens under bark of a decayed oak near Ulting, Essex, in company with *Q. scitus*, and they all seem to exactly resemble each other, although I cannot but think that they are merely a variety of the ordinary form.

Quedius brevicornis, Thoms.—This form appears to be the most distinct, and to have the best claim to rank as a species; the very transverse sub-apical joints of its antennæ, the non-punctured sides of the thorax, and the very prominent temples of its sub-globose head, which are not punctulated, seem to give it more value than a mere variety.

Quedius puncticollis, Thoms.—This insect resembles *Q. brevicornis* in colour, being shining black, with bright red elytra; it appears to be closely allied to this species, from which it chiefly differs in the punctures of the head. I have taken the species in Sherwood Forest by sweeping.

It is very difficult to know what to do with these five forms, whether to class them as separate species, or to reckon them all as varieties of *Q. fulgidus*. To add to the confusion, some continental authorities have revived the *Q. mesomelinus*, of Marsham, of which they make *Q. temporalis* a synonym. The punctuation of the thorax, too, does not always appear to be constant, and specimens seem occasionally to be found with one elytron red and the other black. What is to be done with these insects is, of course, more or less a matter of opinion. At all events, *Q. brevicornis* seems to have specific value.

Quedius rufipes, Er., = *Quedius semiobscurus*, Marsh.

QUEDIUS SEMIÆNEUS, Steph.

This species, however, which was accidentally omitted by Dr. Sharp from his catalogue, is the same as *Q. semiobscurus*, Er. It is a very well marked species, distinguished from *Q. attenuatus*, Gyll., which it much resembles, by the four longitudinal interrupted bands of ashy pubescence on the abdomen (Ent. Ann., 1863, 80).

XANTHOLINUS GLABER, Nordm.

This species, which was also accidentally omitted by Dr. Sharp, ought to be inserted after *X. glabratus*, Grav.

Scopæus Ryei, Wollaston.

This species was found by Mr. Wollaston at Slapton Ley, Devonshire, under stones near the sea, in 1869 and 1872. It differs from *S. minutus*, Er., in being smaller and narrower; its colour is paler, or more reddish-brown, and its surface more opaque; its legs are thinner, and its abdominal segments less strongly divided. In Mr. Mason's notes before referred to, I find one to the effect that *S. Ryei*, Woll., = *S. subcylindricus*, Scrib. Mr. Rye (Ent. Ann., 1874, 82) says that these two species are not synonymous.

LITHOCHARIS PICEA, Kraatz.

This insect is easily distinguished from all our other species by its dark pitchy colour (with elytra rather lighter), and ferruginous legs and antennæ. It must be placed after *L. brunnea* in our list). Taken by Mr. Champion in Bexley Wood, Kent, 1872 (Ent. Mo. Mag., ix, 156).

Lithocharis tricolor, Marsh.

Was, by a misprint, placed as a separate species in Dr. Sharp's catalogue, as he points out in Ent. Mo. Mag., viii, 84; it is synonymous with *L. propinqua*, Bris.

COMPSOCHILUS PALPALIS, Er.

This genus comes very near *Acrognathus; C. palpalis* may, however, be very easily distinguished from *Acrognathus mandibularis* by its much smaller size (Ent. Mo. Mag., viii, 37; Ent. Ann., 1872, 59).

Deleaster dichrous, var. LEACHII, Curt. (= *adustus*, Bielz).

This variety has the elytra strongly infuscate at the apex: it seems confined to the northern part of England, and to Scotland. The southern specimens appear all to belong to the type form (Ent. Mo. Mag., viii, 15).

Acidota cruentata, Mann., *var.* FERRUGINEA, Er.

This variety differs from the type in being smaller, narrower, with very markedly shorter elytra, of which the punctuation seems more confused. Taken by Mr. Lawson near Scarborough (Ent. Mo. Mag., ix, 190). This variety certainly looks like a good species, and if it is to be kept as a variety, there are several other species that might be sunk with quite as good reason.

Olophrum consimile, Er. (*Omalium consimile*, Gyll.).

Distinguished from our other two species by its narrower build, its thorax being sinuate at the sides behind the middle, and its longer elytra. Taken by Dr. Buchanan White at Braemar, 1871 (Ent. Mo. Mag., viii, 73; Ent. Ann., 1872, 60).

Eudectus Whitei, Sharp.

The genus *Eudectus*, new to our list, comes very near *Coryphium*: the strongly angulated sides of *E. Whitei* will, however, serve at once to distinguish it from

Coryphium angusticolle, which is the only British species that it resembles. It seems very probable that *E. Whitei* is only a dark northern form of *E. Giraudi*, Redt. A single specimen was taken by Dr. Sharp on the summit of Ben-a-Bhuird, Braemar, in June, 1871 (Ent. Mo. Mag., viii, 73; Ent. Ann., 1872, 61).

Homalium brevicorne, Er.

This species (introduced as British by Rev. A. Matthews, Zool., 8650 [1863]) has given rise to considerable discussion: it appears to be regarded by some continental entomologists as a variety of *H. vile*, Er. Mr. Matthews, however, considers it a thoroughly good species, and says that it is readily distinguished by its shorter and more robust antennæ, of which the second joint is largely incrassated, its shorter and more rounded thorax, and more distinctly striated elytra.

HOMALIUM TESTACEUM, Er.

This insect comes close to *H. vile*, Er., in our list: it differs, however, from this species in its more remote punctuation, and in its pale rufous colour: it also has a short, smooth, shining ridge on the hinder part of the disc of the thorax. Taken by Mr. Matthews near Gumley, Leicestershire (Ent. Ann., 1864, 62). This insect has been omitted from the British list, but is, I think, certainly a good species.

(*To be continued*).

HINTS AS TO THE BEST MEANS OF REARING LARVÆ OF *TORTRICIDÆ*.

BY CHAS. G. BARRETT.

For some years I have occupied myself, as far as circumstances would permit, in working out the life-histories and describing the larvæ of our British Tortrices, and, thanks to the kind help of friends in different parts of the country, have had opportunities of examining a great many species, some of them of extreme interest. In many cases these larvæ have been by no means easy to rear, from peculiarities in their habits or dispositions, and I, therefore, think that a few remarks on the peculiarities of Tortrix larvæ and the best modes of rearing them may be interesting.

There is no great difficulty in rearing the leaf-rolling species of the genera *Tortrix*, *Lozotænia*, and part of *Pœcilochroma* (of Wilkinson's "Tortrices" and Stainton's "Manual"), nor those which draw together leaves either flatly or by folding or spinning several together, such as *Peronea* and its allies, *Phlœodes*, *Pædisca*, *Coccyx*, &c., because they mostly feed on the comparatively dry and firm leaves of trees or bushes, and are in consequence but little subject to the annoyance of mouldy food. All that is necessary is to put the rolled, twisted, or joined leaves containing the larvæ into large tins or gallipots, closely tied down and covered with glass, and to open them daily for ventilation, supplying fresh food when necessary. Particular care, however, must be taken never to introduce any food in a damp state, from either dew or rain, or mould will be the immediate result. These species will spin up among their food-plant and emerge in many cases in a fortnight, in all cases within the same season. The few species in these groups, such as *Tortrix icterana* and *viburnana* and *Œnectra Pilleriana*, which generally feed on succulent low-growing plants, should have plenty of air, not being covered with glass unless the food begins to wither, such plants becoming very quickly rotten if covered closely down. This is also the case with the curious balls of young bramble leaves twisted up by the larva of *Notocelia Udmanniana.*

In the case of the very numerous species which feed in the shoots of shrubs and low plants eating out the young leaves, such as the larger species of *Antithesia*, *Hypermecia*, *Brachytænia*, *Pardia*, *Spilonota*, *Hedya*, *Steganoptycha*, parts of *Paramesia*, *Semasia*, and *Pœcilochroma*, much judgment must be used. Where the shoots are of hard-leaved bushes and plants and the larva does not pack its domicile with frass, tins or gallipots may be used and covered with glass, or wholly or partially uncovered as seems necessary from the state of the weather or the condition of the food, but shoots of soft-leaved low-growing plants, and those which, as in the case of *Steg. nævana*, are apt to be full of frass, should be put into ordinary rough flower-pots and tied tightly down with calico, old lining, or any close-textured material that comes to hand. These pots allow a good deal of evaporation, and if dry moss is introduced it will also absorb some of the superfluous moisture, so that glass may be laid either completely or partially over these also to keep the food from withering, but it must be frequently removed and the food stirred up and examined and prevented from becoming mouldy or rotten. The same should be done with larvæ of *Sericoris*, some of which feed in flower-spikes as well as young shoots, and are, therefore, still more liable to injury from mould or decay. But of all the low-plant feeders the most difficult by far to rear are the *Sciaphilæ*. It is hardly possible to keep the solid composite flowers in which *perterana* and *ictericana* feed from becoming mouldy, and the larvæ do not willingly move to fresh flowers. Perhaps the best plan is to tie up the infested flowers with others in close bunches, so that air can get round them and then tie them down in flower-pots. The shoots and curved leaves in which *virgaureana* and other species feed can only be treated as before described. But the difficulty of keeping the food in good condition is as nothing compared to the difficulty of keeping the larvæ in any sort of confinement. They seem beyond measure impatient of imprisonment, and as soon as they discover the least closeness in the air or change of condition in the food, begin to wander round the vessel, and try by every possible means to escape. If it is not very tightly tied down they force their way under the string, perfectly indifferent to a squeezing that while in operation completely flattens them, and if the string is too tight they will force their way between the covering and the pot or into the smallest fold and there die after reducing themselves to the thickness of brown paper. To frustrate their efforts the covering must be of strong calico or cloth, and must be tied down with *thin* string which must be wound five or six times round the pot and *strained tight at each round*, and the covering material then pulled tight. No larva can then force its way under the string and they cannot easily get between the calico and the pot, but to completely prevent this the best plan appears to be to rub a little lard or other form of grease round the edge of the pot. This they detest and will not willingly touch, and it *does* seem to circumvent them. If by these devices the larvæ can be compelled to remain in the pot, they will spin up among the food-plant or in the moss, but so much sulkiness remains in their disposition that the moths, on emerging, will often remain among the rubbish at the bottom until spoiled. The best plan is to examine the food and pick out the pupæ, which do well if placed on soft material in a chip or card box. If, however, when full-fed the larvæ are allowed to force their way with difficulty out of the pot they appear quite satisfied, and will spin up in the first available place; so that I have obtained numerous pupæ by simply laying a squeezed-up piece of gauze or leno, or even some dry moss, loosely on the top of the pot.

There are a very few leaf-feeders such as *Stigmonota Weirana* and *nitidana*, which hibernate in a cocoon between the leaves on which they have fed. These give little trouble and only require to be kept cool.

The species of the genus *Retinia*, which feed in fir-shoots, are tolerably easy to rear if the shoots are not allowed to get too dry, as they do not readily become mouldy, and the larvæ will move freely to fresh shoots. A common flower-pot covered with glass is the best for them.

Some of the species of *Anchylopera*, which feed on the leaves of shrubs and make themselves domiciles in which to pass the winter, are rather difficult to rear, and must have winter exposure, but those which feed in early spring on clover, &c., are easily managed.

Except the *Sciaphilæ*, no *Tortrix* larvæ are so hard to rear as the various groups of seed-feeders. There certainly are exceptions, such as *Antithesia gentianana* and *marginana*, *Asthenia strobilella*, and *Eupœcilia roseana*, which obligingly remain in their respective seed-heads all the winter, requiring only to be kept cool and not too dry, and not even needing to be wintered out of doors. The feeders on Papilionaceous seeds, such as *Stigmonota orobana* and *dorsana*, after leaving the seed-pods will spin their tough cocoons on rotten wood or calico, and may also be wintered indoors. But it is quite otherwise with the genera *Catoptria*, *Endopisa*, *Carpocapsa*, and parts of *Grapholitha*, *Semasia*, *Eupœcilia*, &c. Most of these feed up with very great rapidity, becoming full-fed almost before the parent moths have ceased to fly—say, within a month or six weeks of the time of the egg being laid—and remain for nine or ten months in cocoon in the larva state, in most cases leaving their food and spinning up among *débris*, or under stones, or other suitable places. Having to arrange for so long a repose it is natural that they should wish to choose a suitable and comfortable spot, but some seem unnecessarily fastidious. All that I have recorded of the restless, obstinate, and suicidal tendencies of *Sciaphila* larvæ applies equally to these. They must be tied down in flower-pots tightly and the covering material strained as already suggested—not omitting to grease the edge—and when they find that they cannot really escape they may generally be tempted to spin up by the introduction of pieces of rotten wood, cork, hollow sticks, folded paper or rag, or the stems of their food plants. Sometimes nothing will give satisfaction, and the larvæ, after sulking for weeks, will actually dry up and die without any material alteration in their appearance. I have known dozens of larvæ of *Catoptria æmulana* to die in this way after leaving their food—the seeds of the golden-rod. On the approach of winter the pots containing larvæ of any of these groups must—the hole in the bottom being first stopped so as to exclude insect foes, but allow drainage—be placed in the open air, exposed to the influences of any weather that may come. It is well to look at them occasionally lest the covering gets rotten and broken, or the pot is rolled over by some active cat, but, making allowance for accidents, larvæ kept in this manner out of doors until the end of April or even into May, will generally produce a fair proportion of moths.

The internal, stem- and root-feeding species require very various treatment. The succulent stems in which the *Halonotæ* principally feed, require to be kept alive in moist earth until the larvæ are full-fed, and care must afterwards be taken that the stems do not ferment from lying too close together, or dry up before the moths emerge. The species, such as *Grapholitha pupillana* and the *Dicroramphæ*, which feed in the stems of harder plants, also thrive better if the roots are kept in moist earth, and this precaution must of course be taken with the root-feeding *Euchromiæ*, *Orthotæniæ*, and *Xanthosetiæ*. Most of these species are best collected in the spring as the larvæ are slow feeders, and not easily discoverable until tolerably well grown. Most of them turn to pupa in the stems, though *G. pupillana* follows the custom of its allies in wandering away and spinning up elsewhere.

The larvæ of *Antithesia fuligana*, *E. nigricostana*, and several of the *Eupœciliæ* and *Argyrolepiæ*, which feed in the soft stems of low-growing plants, must be collected in the autumn before the dead stems are broken and scattered by the winter storms. The stems must be kept fresh in moist earth until they naturally die down, by which time the larvæ have generally spun up, and the stems may then be kept in pots, jars, or even bottles, care being taken that they do not get either mouldy or too dry, and will do as well in a cool room as out of doors.

Of the larvæ of the few bark, rotten wood, and gall-feeders, I know scarcely anything. They are difficult to find and, I should think, very hard to feed up in confinement, though, if collected when full-fed or in pupa they emerge well enough. I once reared ***Asthenia coniferana*** from fir bark, but did not see the larva. One larva I did find in the same bark, but am extremely doubtful of its species, and quite sure that *it* was not reared.

Having now made public property of my own small stock of knowledge on this subject, I earnestly appeal to those who may find (known or supposed) larvæ of interesting local or undescribed species, either to communicate to me a description with particulars of their habits, or allow me the opportunity of making it myself.

Pembroke: 17*th November*, 1882.

ON A SMALL SERIES OF *LEPIDOPTERA* FROM THE HAWAIIAN ISLANDS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

The present consignment was received last January, but until now I have been so much engaged in working out the large collection of *Lepidoptera* made by Mr. Edmonds, in Chili, and with other almost equally important collections, that I have been unable to examine it.

The first species is rightly indicated with doubt as a ***Boarmia;***

for, although congeneric with two Hawaiian species, which I (misled by the appearance of their females) erroneously referred to *Scotosia*, it, nevertheless, belongs to the group of genera confounded under the name of *Boarmia:* under this designation there must be at least three or four good and characteristic genera.

In a collection received from Mr. Blackburn, in 1880, were males of my "*Scotosia*" *rara*, which ought perhaps to have opened my eyes to the fact that this species and *S. corticea* had no business in that genus, but I suppose that, having a name for the species, I failed to examine it critically, and thus perpetuated my error.

These three species, then, will fall into a new genus of *Boarmiidæ* which I shall term:—

SCOTORYTHRA, *gen. nov.*

Wings entire; primaries triangular, with straight costal and inner margins and slightly convex outer margin; first and second sub-costal branches emitted close together near the end of the cell; the third, fourth, and fifth branches emitted from below the second at some distance beyond the cell, the third and fourth forming a long fork to apex, the fifth being nearer the cell and, therefore, emitted sooner than the two preceding branches; radials normal, the upper radial being emitted from the anterior angle of the cell, and the lower from the middle of the discocellulars which are transverse and not angulated; the second and third median branches emitted almost from the same point at the posterior angle of the cell; secondaries sub-pyriform, decidedly narrower than in typical *Boarmia*, with slightly undulated outer margin; costal and sub-costal veins lying close together towards the base, so that, to the naked eye, the former appears to be emitted from the latter; the sub-costal simple, passing away from the cell before its extremity, the discoidal area being confined by the continuation of the radial into the sub-costal; discocellular slightly oblique, divided by a strongly defined longitudinal fold; median branches exactly as in the primaries: body rather slender, especially the abdomen of the male, which extends considerably beyond the posterior wings; palpi rather large, coarsely scaled, projecting (as in *Scotosia*) for some distance in front of the head, the terminal joint depressed; forehead conical between but a little below the antennæ; the latter organs very long, especially in the male, plumose from about the basal fifth to the external two-sevenths; thorax rounded, abdomen with well-defined anal tuft; legs long and slender with the exception of the tibiæ of the hind pair which are broad and compressed; tibiæ of second pair terminating in two unequal well-marked spurs.

1. *Scotorythra arboricolens, sp. n.*

♂. Allied to *S. corticea:* dark smoky-grey; wings transversely striated with creamy-whitish, but less strongly towards the outer margins, thus leaving a well-defined external border; two central slightly angulated blackish parallel stripes; antennæ white with greyish pectinations; back of thorax and abdomen dark sericeous grey; posterior edges of abdominal segments white; anal tuft testaceous:

under-surface sericeous whitey-brown; wings washed with grey to beyond the middle, where there is a paler discal band followed by a darker external border; the whole surface indistinctly striated with grey; diffused blackish discocellular spots.

Expanse of wings, 39 mm.

"Occurs on tree-trunks at an elevation of about 2000 feet, on Lanai; very hard to catch, as it flies wildly before one can approach near enough to its resting-place, and the ground is almost too rough to attempt pursuit: September."—T. B.

But for its different ground-colour and distinctly striated upper surface, I should have supposed this to be the male of *S. corticea.*

PYRALES.

2. *Scopula litorea, sp. n.*

Sericeous creamy-whitish; palpi very long, curved and deflexed; primaries irrorated with ferruginous, crossed at basal third by an irregularly sinuated black-spotted greyish line; two parrallel discal series of black spots forming a wide arch to the first median branch, where they turn outwards at an acute angle and then again transversely to inner margin; discoidal spots ferruginous, ill-defined; secondaries with a spot at the end of the cell and an arched denticulated discal line, dark grey; a second paler grey line nearer to the outer margin; all the wings with a marginal series of minute blackish points, which in the primaries are continued along the costa to the end of the cell; wings below slightly sordid; primaries with the markings indicated in grey; the reniform spot outlined in grey; secondaries with all the markings represented by black dots; otherwise much as above.

Expanse of wings, 14—18 mm.

"Occurs on the sandy sea-shore at a place called Mauna Lea (Lanai), flying over flowers: September."—T. B.

ORTHOMECYNA, *gen. nov.*

Allied to *Mecyna*, from which it differs in its less prominent eyes, less pointed and loosely scaled palpi; the shorter costal margins to the wings, the less oblique and straighter outer margin of the primaries and smaller secondaries. Type "*Mecyna*" *exigua.*

A second species, having similar structural characters to those of *M. exigua*, being now sent (with additional examples of that species), I feel satisfied that the difference between them and typical *Mecyna* warrant their separation from that genus.

3. *Orthomecyna albicaudata, sp. n.*

Primaries above golden-cupreous; sometimes with an abbreviated irregular blotch representing the central band over the end of the cell from costal margin to median vein, below which it is indicated only by one or two small isolated spots, sometimes wholly wanting; a more or less defined angular blackish lunule on the discocellulars; external area washed with brown, which, however, only becomes distinct upon the border, which is limited by a sub-marginal series of black-edged dots of the ground-colour; secondaries dark brown, broadly blackish on the outer border and traversed by two divergent longitudinal bright ochreous stripes from the base to the third fourth of the wing; costal and abdominal borders pale, the abdominal area clothed and fringed with long fine hairs; body golden-buff, with white anal segment; legs pearly-white, the anterior pair sordid, above grey, banded with whitish; wings below golden; body below pearly-white.

Expanse of wings, 20—21 mm.

"Occurs on the same ground as 172 (*Scotorythra arboricolens*): apparently rarer, but not difficult to capture. In my small series one specimen has an intense black mark on each wing, representing the indistinct dark blotch on the costa of the front wing of the smaller specimens sent, and I notice some variety in the extent to which the hind wing is suffused with yellow."—T. B.

4. *Orthomecyna exigua, var. cupreipennis.*

The primaries sometimes of the usual character, divided into irregular grey areas edged with black and white, with sub-marginal and marginal series of black spots; sometimes uniformly sericeous grey with a marginal series of black spots alone; secondaries pale cupreous with diffused dark greyish external border.

Expanse of wings, 18—20 mm.

"Taken on Lanai, in September."—T. B.

This form, if it be constant to locality, might well be separated specifically from *O. exigua;* for although the pattern and coloration of the primaries is almost identical in some examples, that of the secondaries is wonderfully dissimilar.

MELANOMECYNA, *gen. nov.*

To this genus I propose to refer my *Mecyna ennychioides* and *M. nigrescens;* they differ from typical *Mecyna*, of which *M. virescens* is the Hawaiian representative in their long-scaled truncated palpi, their sooty-black coloration, and small size, which characters give them the general aspect of *Boreophila:* they, however, differ widely from the latter genus in their narrower and more pointed wings: in neuration they correspond with *Mecyna.*

5. *Melanomecyna stellata, sp. n.*

♂ ♀. General appearance and coloration above of *M. ennychioides* but the wings rather shorter, the inner black stripe of the central belt on primaries edged near the inner margin with ochraceous; the reniform spot represented by a black 8-shaped character; outer black stripe dotted along its outer edge with minute snow-white dashes; marginal black spots separated by minute white points; fringe long, more broadly white-edged than in *M. ennychioides;* eyes much darker; under-surface altogether more uniformly coloured; the discal blackish spots less distinct, not relieved by pale edges; fringe silvery-grey.

Expanse of wings, ♂, 18 mm., ♀, 16 mm.

"Occurs on the mountains of Oahu in October."—T. B.

The receipt of this species in both sexes is satisfactory, since it renders the distinctness of *M. ennychioides* from *Aporodes? micacea* more probable.

GESNERIA, Hübner.

To this genus Hübner referred the broad-winged species with long palpi, usually placed under *Scoparia*: he gave no characters; his description being merely—"The wings marked with an indistinct central spot." The type is *G. centurionalis*.

6. *Gesneria floricolens, sp. n.*

Aspect of *G. mercurella*, Linn., but in coloration nearer to *Hellula undalis*: primaries grey, varied with pale creamy-buff, crossed by three white stripes edged externally with blackish dots; the two outer stripes (representing the limits of the central belt) sigmoidal, enclosing the reniform spot, which is cream-coloured with two black dots upon it; the base and central belt are a little paler than the rest of the wing, the disc being slightly the darkest area; a sub-marginal series of black dots from which small white dashes run outwards to the margin, interrupting a black marginal line; fringe white; secondaries sericeous creamy-white, greyish at apex; fringe snow-white, traversed by a grey line: body sordid cream-colour; head greyish, antennæ brownish; under surface silvery-white; anterior tarsi banded above with grey. Expanse of wings, 14 mm.

"Two specimens from Lanai: on the sandy sea-shore at Mauna Lea, flying over flowers: September."—T. B.

TINEINA.

7. *Depressaria sp.* ——?

Two examples of a grey species with whitish secondaries; both of them unfortunately destitute of palpi, on which account it appears to me that it is wiser to abstain from naming this insect: it is doubtful whether it really is a *Depressaria*.

"Not rare in September among parched vegetation on the sandy plains of Maui; but most specimens were in poor condition."—T. B.

8. *Azinis hilarella.*

Azinis hilarella, Walker, Cat. Lep. Het., xxviii, p. 542 (1863). "I have twice taken this insect, though at long intervals: each time it was apparently attracted by light, but seemed very sluggish, and apparently satisfied to sit and look at the light from a distance."—T. B.

The example sent agrees with three specimens collected by Mr. Hobson, in Formosa: it is, therefore, evident that this species has a very wide range.

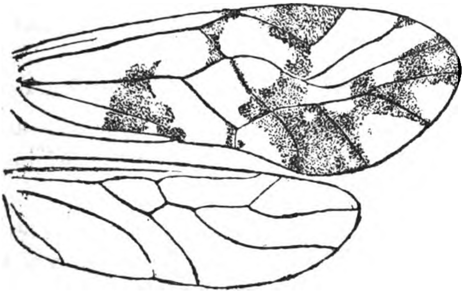
British Museum: ***November*, 1882.**

REMARKS ON CERTAIN *PSOCIDÆ*, CHIEFLY BRITISH.

BY R. McLACHLAN, F.R.S., &c.

Psocus (Neopsocus) rhenanus, Kolbe.

On the 30th July, 1882, the Rev. A. E. Eaton was in the Apennino Pistojese, Central Italy, and was staying at the Villa Margehareta, near San Marcello. In the grounds of the hotel he turned over a large slightly embedded stone in search of Isopods. Under this stone was a nest of a small ant (*Myrmica* sp.), and in company with the ants were a number of a pretty little *Psocus*, mostly fully winged, but also others (that he did not capture) with undeveloped wings, which prove identical with a species recently described (Entomol. Nachrichten, viii, p. 207, August, 1882) by Kolbe under the name *Neopsocus rhenanus*, found by Dr. Bertkau under a stone (apparently *not* in company with ants) in Rhenish Prussia.



The main characters of *Neopsocus*, as distinguished from *Psocus* (restricted), are:— ♀ sub-apterous, ♂ with fully developed wings; body clothed with microscopic, thickened, truncate, erect glandular hairs (most numerous in the ♀). In the anterior wings the lower angle of the pterostigma is produced into a very short thickened spur-vein* (to be seen in a greatly exaggerated form in the Indian *Amphipsocus*, McLach.).

The species is an exceedingly pretty little insect, about 6½ mm. in expanse, with hyaline wings, on the anterior of which are fuliginous spots and bands arranged as in the figure; the pterostigma whitish (or yellowish) at its commencement; the neuration black, partly milk-white.

The Italian individuals have the markings of the wings rather darker than in the only example I have seen from Prussia.

It is probable that *Neopsocus* may be really entitled to generic rank (especially on account of the nearly apterous ♀). In the eight Italian examples before me the neuration is extremely unstable in minute details (all possess the spur-vein). As to the condition of the discoidal cell, most of them would (on this character) fall into *Psocus* as restricted by Kolbe, others would fall into *Amphigerontia*, Kolbe (one even presenting the condition seen in *A. bifasciata*, Latr.); and the form of the posterior marginal cellule is also very variable.

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* In the figure here given this is not sufficiently indicated.

Psocus bipunctatus, L., was once found by Meyer-Dür in numbers under a stone in Switzerland, not in company with ants. It is possible there may be no real connection between the ants and *N. rhenanus*; but, at any rate, the latter were not molested by the former. Stone-turning will probably become a practice with Entomologists in search of rare and new forms of *Psocidæ*.

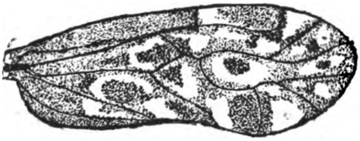
PERIPSOCUS ALBOGUTTATUS, Dalman, & P. PUPILLATUS (Dale), Walker.

Two perfectly distinct European (and even British) species are confused under these names, the names themselves, in their original signification, representing one and the same species.

Some time ago I felt certain we had two species in England, and communicated the materials to Herr Kolbe, who agreed with me. Latterly, in the "Entomologische Nachrichten," viii, pp. 211—212, he separated them as *P. alboguttatus* and *pupillatus*, but in error, and his *alboguttatus* stands in need of a new name. I briefly characterize the two species, with notes, &c.

1. P. ALBOGUTTATUS, Dalman (*pupillatus* [Dale], Walker; Hagen; Kolbe: *alboguttatus*, McLach., *olim*, *part.*; Spångberg: *striatulus*, Steph., *part.*, *sec.* collect., *nec* Fab.).

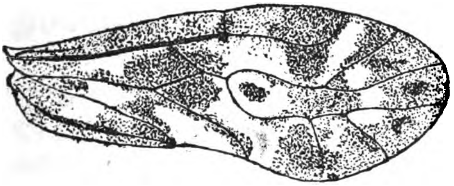
Much smaller than the succeeding species, the anterior wings only expanding to 5—5½ mm. The head and thorax darker brown (nearly black in life). Anterior wings very dark grey (nearly black in life); *in nearly all the cellules and areas the dark ground is represented by a pupillate spot surrounded by white; a double sub-apical series of white spots.*



Has been taken in England by the late Mr. Dale and by myself; I found it commonly on the 4th July, 1873, near Weybridge, by beating bushes of *Calluna* that overhung a high bank. Switzerland: I found an example in the Forêt de Pfyn, Canton Valais, on the 10th July, 1882, amongst *Pinus sylvestris*. Rhenish Prussia. Sweden; according to Dalman and Spångberg. Madeira; Wollaston.

This is undoubtedly Dalman's *alboguttatus*, as is proved by the following words in his diagnosis: "alæ nigræ, maculis discalibus majoribus albis 6, puncto nigro inscriptis, vel sub-ocellatis; intra marginem apicalem puncta 10 minora alba, duplici serie ordinata." It is also *pupillatus* (Dale), Walker, as represented by the single specimen from which Walker's diagnosis was taken; but Mr. Dale subsequently distributed it and the following species under this name, and specimens from him, thus confused, are in the British Museum and in my own collection. In my Monograph in the Ent. Mo. Mag., vol. iii, the two species are apparently confused in the description, but the figure (pl. ii, fig. 8) represents that now under consideration. This species is probably widely distributed, but before any trustworthy ideas on this point can be arrived at, students of *Psocidæ* must re-examine their collections and state the results.*

2. P. SUBPUPILLATUS (*alboguttatus*, McLach., *olim*, *part.*; Meyer-Dür; Rostock; Kolbe; *nec* Dalman: 4-*maculatus*, Steph., *part.*, *sec.* collect., *nec* Latr.).



Larger than the preceding species, the anterior wings expanding to 6—6½ mm. The head and thorax paler brown. Anterior wings pale grey (often extremely pale); a large pupillate spot in the area at the base of the forked vein, but *otherwise the cellules and areas are not pupillate; a single series of large white spots at the base of the apical cellules and areas;* there is a faintly indicated sub-apical series of darker spots, but they are not enclosed in white spots, and hence are not pupillate.

This is commonly known in collections as *alboguttatus*, and is probably spread over nearly the whole of Europe. It is partial to *Pinus sylvestris*, but may be beaten from almost any tree.

CÆCILIUS OBSOLETUS, Steph.

Kolbe recognises three species as confused under this name, all of which occur in Britain. Below I give a translation of his tabular diagnoses from Ent. Nachr., viii, p. 211.

a. Body greyish-yellow. Wings yellowish; posterior marginal cellule moderately large, broad, depressed . . . . *obsoletus*, Steph.

Body brownish-yellow. Wings brownish; posterior marginal cellule small, broad, scarcely depressed . . . . *Burmeisteri*, Brauer.

b. Body bright pale yellow to reddish-yellow; posterior marginal cellule very small, elliptical . . . . *perlatus*, Kolbe.

I possess all three in my British collection, determined by Kolbe. All are closely allied, yet I think he may be justified in separating them; but they require to be studied in connection with their habits. There is some difficulty in deciding as to whether Stephens' single type of *obsoletus* belongs to the species indicated by Kolbe under this name, or to *Burmeisteri*. I am not quite satisfied. *Perlatus* is the most distinct-looking of the three. These species frequent *Pinus*, *Taxus*, and *Juniperus*, especially the latter; they should be collected in numbers, and be carefully labelled with regard to locality, &c. Herr Kolbe is an enthusiastic young student of *Psocidæ*, and has done remarkably good work, but some of his deductions will prove ill-based in consequence of too minute subdivision.

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* The rudimentary sub-costa is incorrectly delineated in the figure here given.

ELIPSOCUS UNIPUNCTATUS, Müller.

British Entomologists should examine their specimens of this insect. Kolbe has separated it from *Elipsocus* under the generic term *Mesopsocus*, on certain small characters, the chief of which is that the "forked vein" is sessile at the base of the fork. But *Elipsocus* as defined by him is headed by a species he terms *E. laticeps*, excessively close to *M. unipunctatus*, and differing chiefly in the "forked vein" being shortly petiolate at its base. Since Kolbe's monograph appeared in 1880 I have diligently collected *unipunctatus*, hoping to discover *laticeps* amongst them, but have not succeeded in so doing, although I note considerable variation in the neuration, the smallest exaggeration of which, in some examples, would produce *laticeps* (as defined by neuration only). The fact that the latter apparently does not occur in Britain is in favour of its distinctness; even if it prove to be distinct, there was small necessity for the genus *Mesopsocus*.

CLOTHILLA ANNULATA, Hagen.

This little "book-louse" was described by Hagen in the Ent. Mo. Mag., vol. ii, p. 122 (1865), from specimens found in boxes of "European insects." It has since been found in several parts of Europe, and has been recorded from England in several continental publications, on my authority. But I do not think it has ever been formally noticed as British in a British publication. Seven or eight years ago I noticed three or four examples amongst the mass of small boxes, &c., &c., that adorns (?) the mantelshelf in my study here at Lewisham, but have not observed it since; and of its actual origin I know nothing. It is just one of those insects to which no native country can be assigned. Hagen has seen it in North America, and figures it in the Stettiner ent. Zeitung, 1882, pl. ii, fig. 7.

N.B.—Kolbe considers *Clothilla*, Westwood, only a synonym of *Atropos*, Leach, whereas, according to him, *Atropos* of authors of the present day should take the name *Troctes*, Burmeister. Leach's characters for his Family *Atropida* (Edinburgh Encyc., vol. ix) were simply "tarsi three-jointed," and the type of his genus *Atropos* is "*lignaria*," with the citations "*Termes pulsatorium*, L.," and "*Termes lignarium*, De Geer." On this evidence I am inclined to think Kolbe may be justified in the view he has taken, but such a change is exceedingly inconvenient. The insect described by De Geer and Linné is certainly that which we now term "*Clothilla pulsatoria*." *Troctes* of Burmeister is also certainly identical with what we term *Atropos*. I believe Kolbe's views will have to be adopted.

Lewisham, London :
December, 1882.

Notes on certain captures during the past season in the Forest of Dean.—Out of fifteen successive seasons I cannot recall one in which the months of May, June and July yielded so small a harvest to the working Lepidopterist. And this is the more surprising, because, in the preceding year, examples of the commoner species that frequent this district were easily obtainable, and most of them abundant. But although larvæ were then so numerous here, observations made at the time led me not to expect more than a normal number of imagos from the devouring host, for destroyers of one kind or other were as ubiquitous as their victims, and the traces of their handiwork quite as apparent. Nevertheless, certain early spring moths proved to be plentiful, so that, when noticing frequently on the oak trunks during February, March, and the first fortnight of April, *N. hispidaria*, *P. pilosaria*, *H. progemmaria*, *H. leucophæaria*, I little thought that, at the close of 1882, my list of captured *Lepidoptera* would turn out to be such a small one. This, however, is the case. Since mid-April the dearth of butterflies and moths has been, at least, as marked in this part as in those other portions of our islands from which complaints on the subject have found their way into the Magazine, so that there has been little or no inducement to carry the usual paraphernalia of a Lepidopterist during one's rambles in the woodland. To be sure, just before and after that date, *A. prodromaria* and *C. ridens* were now and then met with, after, in each case, a most diligent search ; but, then, these captures are miserably insignificant if placed side by side with those made at corresponding dates in 1881, when one evening, after two hours' work, a collector returned home with thirty picked specimens of *A. prodromaria*, and, for want of space, left quite double that number on the moss, where they had just attained their full development. In fact, I have not used the net throughout the season, and this not through inability or indisposition, but because the weather was felt to be of such a kind, as to make it exceedingly probable that no adequate return would be gained by that method of collecting. To take the insects mentioned above a few pill boxes sufficed. From the 1st May onwards my total captures in the order do not amount to double figures, as it is little use (if any) to take of the commonest species more than enough for one's own series. Scanty as this number is, it includes an insect whose occurrence may be worth recording, namely, a very fine example of *A. alni* on the afternoon of

20th June. This insect is a conspicuous object when at rest, owing to the sharp contrast presented by the two principal hues of its coloration when viewed with a moss-grown trunk as the background, and to this peculiarity the present capture is doubtless due, and perhaps the rarity of the insect, as birds would not be likely to pass over so conspicuous a delicacy. Two facts bearing upon the *Lepidoptera*, and I shall have finished with the Order, as far as these notes are concerned. The first relates to the supposed complete absence of wings in the female *P. pilosaria*. On comparing series of the female *N. hispidaria* and *P. pilosaria*, it will be found that the stumps of wings are as well developed in the latter as in the former in (at any rate) most cases, and in all that I have examined (a good number) wing-scales could be plainly detected on the rudimentary appendages by the aid of a good lens.

As these spider-like insects possess so much in common, the coloration even being very similar in some instances, a difficulty might occasionally occur in their separation. The difference in the clothing of the tibiæ, however, as pointed out in "The Manual," being of constant character is conclusive, and shows at once to which of the two insects any one specimen must be referred. It seems strange that error should have crept in with respect to so generally distributed a species as *P. pilosaria*, and it at any rate fosters the suspicion that some other accepted *facts* in Natural History, which have been ably used to support theories, which go quite against the grain with the majority, may be found, on closer examination, to be fictitious.

The second fact which this season has helped to establish is the ability of *N. chaonia* to remain for two years in the pupa stage. Two males of this insect appeared in the breeding cage, one on the 21st March, and the other on the 8th April, from larvæ which spun up in 1880.

Turning now from that Order of insects which engrosses the attention of the majority of Entomologists to one equally, if not more, deserving of study, and certainly far more interesting from an anatomical or structural point of view—the *Coleoptera*, most of the species previously recorded from here have again occurred, and that too pretty freely, those that were taken in the greatest quantity being *Homalium planum*, *Silpha 4-punctata*, *Aphodius conspurcatus*, and *A. fœtidus*. One evening in May *Calosoma inquisitor* was to be counted in scores ascending the trunks, and, on standing still in the forest solitude, a busy rustling was audible, caused (as fancy suggests) by a multitude of these beetles crawling over the fallen and decaying leaves of the past autumn, as the mature specimens sped on their way from the pupa chamber to a neighbouring tree. On the following day, at the same time, there were but one or two to be seen so engaged, from which it may be taken as almost certain that the emergence of the bulk of this species took place in a few hours, whereas, usually it may extend over several days. Such a number of examples were secured in the preceding season that not more than two dozen were taken, although, from the arboreal habits of the insect, it is but fair to conclude, that on any bright day in June hundreds might easily have been bottled by jarring the boughs and catching the results in an inverted umbrella, at all events, in that portion of the forest, for the insect is one of local habit. As hitherto unobserved in the district, I have to record the occurrence of *Coryphium angusticolle* under fir bark, *Lathrobium longulum* by stone-turning, *Molorchus umbellatarum* on a window curtain, *Chrysomela didymata* (hitherto scarce here) freely on *Hypericum* in September, not far from the spot where *Chrysomela menthastri* may be picked off the heads of *Mentha*, and *Bledius subterraneus* extracted from the sandy soil beneath, if one has any eyes left for insects when surrounded by the enchanting scenery of the banks of the Wye between Monmouth and Symond's Yat.—A. E. HODGSON, Coleford: *December 4th*, 1882.

Captures at Deal.—In the early part of August last I had two or three days' collecting at the above mentioned watering place. Among the insects taken may be enumerated *Licinus depressus* and *L. silphoides*, *Xantholinus tricolor*, *Syncalypta hirsuta*, *Hypera fasciculata*, and a fair number of *Dianthœciæ* larvæ from *Silene maritima* and *S. inflata*. Along the cliffs between Walmer and St. Margaret's *Lycæna Corydon* made good show, being the only butterfly that one could not fail to notice and admire.—ID.

Description of the larva of Pterophorus pentadactylus.—On the 4th of July of last year, I received eggs of this species from Mr. W. H. B. Fletcher, deposited by a moth he had taken at Worthing. Five days later they hatched, and the newly-emerged larvæ were white, and clothed with long white hairs. They fed for a short time on convolvulus, but hibernated early, when still very small. In April, they recommenced feeding, but by the 15th, were only a little over a quarter of an inch in length. From that time they grew rapidly, and, by the 5th of May, the largest was nearly full-grown.

Length, nearly three quarters of an inch, and of average build. Head polished, it has the lobes rounded, and is a little narrower than the second segment. Body cylindrical, and fairly uniform, tapering only a very little towards the extremities. Segmental divisions clearly defined, the tubercles prominent, and from each of them springs a tuft of moderately stiff hairs: in the tuft of hairs from the tubercles on segments 2, 3, 4, 12, and 13, is a single hair, much longer than the rest, which stands out very conspicuously. Skin soft and smooth, but only very slightly glossy. Ground-colour of a median shade of dark green, exactly the colour, indeed, of the convolvulus leaf, on which it feeds. On the dorsal area, however, the ground-colour only appears as a large lozenge-shaped mark on each segment, except the ninth, the remaining space on each segment, and the whole of the ninth segment, being filled with bright lemon-yellow. The darker green alimentary canal shews through as the dorsal line; there are no perceptible dorsal lines, but there are long and continuous whitish streaks along the posterior half of the spiracular region. Head bright yellowish-brown. the mandibles reddish-brown, and the ocelli black and distinct. Tubercles intensely black, the hairs greyish. The imago from this larva was out on the 31st of May.—GEO. T. PORRITT, Huddersfield: *December 9th*, 1882.

Note on Crambus furcatellus.—About the middle of June we went to one of our old resorts in the Highlands. The first ten days rain, rain, then came a fine day and I ascended a hill nearly 2000 feet high. On the way I looked in on the *Scopula decrepitalis* haunt, and took three, and one *Asthena luteata*, they were almost the only insects to be seen in the place, every thing being in a great state of soak. Higher up I took one *Antithesia Staintoniana*, the utter absence of insect life on most promising ground being quite remarkable. About 1000 feet up and flying over a beautiful stretch of brown peat-bog were one or two *Amphisa Gerningana*, and on the slope above this *Mixodia Schulziana* appeared in great numbers, but no other species along with them, and as the distant mountain peaks were beginning to disappear in the clouds I hurried on, as the lovely day was evidently to be of short duration.

When close to the hill-top I found a *Crambus* flying, one that I had never seen before. It was entirely confined to the summit of the hill, and to the ground sloping down, perhaps twenty-five or thirty feet from the top. There were several rocky points, and immediately below and surrounding those rocky points, dry, springy turf, very short grass, and patches of mountain blaeberry, and another plant the name of which I forget. The moth took quick short flights and invariably settled *on the ground*, never once on the grass: most likely the habit of alighting on the ground is for the purpose of concealment. At rest on the brown peaty soil with little fragments of the dry whitened herbage of the past season scattered about, *C. furcatellus* was almost invisible, had it rested on a blade of grass or other green thing, it must in the bright sunshine and clear mountain air have formed a conspicuous object, and be more liable to the attacks of birds. A pair of meadow Pipits *(Anthus pratensis)* nesting a little bit down from the hill-top and who had that wondrous tameness and fearlessness that most wild creatures seem to possess who choose for their summer homes those lonely solitudes where man rarely intrudes, most probably took measures to prevent *C. furcatellus* becoming too abundant.

It was not inclined to rise often on the wing unless disturbed, so I trudged up and down for two hours and secured some, and then saw that heavy clouds were drifting towards the place, and as I had a stretch of hill-bog to cross where landmarks were sadly wanting, I made a start for home and just reached the glen in time to escape a deluge.—Jane Fraser, 18, Moray Place, Edinburgh: *November 27th*, 1882.

Sericomyia borealis.—Some of your readers will remember a note of mine in this Magazine for December, 1881, on *Sericomyia borealis* "singing" while at rest. This note elicited interesting letters from Mr. Swinton, of Guildford, and Mr. Hellins, of Exeter. Curiously enough, Mr. Hellins' letter answers, at least in part, a question which was asked nearly thirty years ago, but has apparently hitherto received no answer.

In the Naturalist, for 1852, page 177, Mr. J. C. Dale gives an extract from a letter sent by Mr. Paris, the son of Dr. Paris, to Mr. Curtis; it is as follows: "I also wanted to ask you the name of an insect which bothered me occasionally when I wanted to be quiet and enjoy a fine view, but, unfortunately, I neglected to procure a specimen, and, unless you happen to have visited the spot they haunt, my description will not be sufficient. On the summits of the Dartmoor tors, not only on the highest rock, I was always assailed by a multitude of flies, bearing a resemblance to the bee (but not what we used at school to call "darting flies"), which came by two or three, increasing in number every moment, flying and buzzing in my face, until I was forced to a precipitate retreat. When they settled on the rock they began a very harmonious piping, to which I could willingly have listened, had the rest of the band desisted from their persecution. I defy any person to stand quiet for five minutes on the top of one of these tors. If you have visited Dartmoor, I am sure you must have noticed them."

Mr. Dale then mentions that he has shown this letter to Mr. Haliday, and spoken of it to Mr. Spence, but neither could make it out; and, he adds: "Can any of your correspondents suggest what insect this is?"

After giving extracts from Ray (page 273) and Mouffet (page 61), as probably referring to the same insect, he makes a guess, and asks whether this fly might be a *Tabanus*, *Asilus*, or, perhaps, less probably, *Œstrus* or *Sericomyia*.

I think we are now in a position to say that Mr. Paris' piping fly was probably *Sericomyia borealis*. Mr. Hellins, in answer to my enquiry, informs me that the flies certainly never drove him away from the top of the Dartmoor tors; but when he was a boy their behaviour seemed to him to be rather threatening—he had not observed this in subsequent visits.

In conclusion, let me ask, can any one corroborate Mr. Swinton's suggestion, that *Sericomyia* oviposits in decaying stumps?—E. N. BLOOMFIELD, Guestling Rectory: *December* 15*th*, 1882.

Notes on British Hemiptera.—In the September number of this Magazine, page 87, I made some remarks on *Globiceps salicicola*, Reut., and I there said that I would send the examples which I had taken at Deal, and which I thought were referable to that species, to Dr. Reuter for confirmation.

I have just received these back, and am able now to state, on Dr. Reuter's authority, that they are not *salicicola*, but only our ordinary species, which, he informs me, frequently occurs on sallows; he, at the same time, says that the specimen which he took in Scotland and recorded as *salicicola*, in vol. xvii, p. 13, of this Magazine, is also only our ordinary species, so that *salicicola*, Reut., will have to be expunged from our list. Dr. Reuter has very kindly sent me a ♂ and ♀ of this species, which is apparently quite distinct from either of our four-spotted species, as pointed out by him (*loc. cit.*). As the species occurs in Sweden, one may hope to be able some day to re-admit it into our list.

What I have here termed our ordinary species, *i. e.*, that called by Messrs. Douglas and Scott, in their monograph, *flavomaculatus*, Fab., by myself, in my synopsis, *fulvipes*, Scop., and by Dr. Reuter (*loc. cit.*), *flavomaculatus*, Fab., will now have to stand under the name *cruciatus*, Reut., as Dr. Reuter says that he has examined the Fabrician types of *flavomaculatus*, and finds that they belong to *selectus*, Doug. and Scott.

The synonymy, therefore, of these species will stand thus:—*flavomaculatus*, Fab., Fall., F. Sahlb., E. Saund. (*nec* Fieb., *nec* Doug. and Scott), = *selectus*, Fieb., Doug. and Scott; *cruciatus*, Reut., = *flavomaculatus*, Fieb., Doug. and Scott, Reut., *olim*, = *fulvipes*, E. Saund. (*nec* Scop.).—EDWARD SAUNDERS, Holmesdale, Upper Tooting: 8*th December*, 1882.

Note on Aphalara subpunctata, Först. (*A. pallida, Leth.*).—M. Lethierry informs me that he takes this species abundantly, in the perfect state, in June and July, upon *Epilobium angustifolium*. As it has not been recorded as British, but might possibly be found here, perhaps some careful observer would look out for it during the coming season. I certainly saw no trace of it when at Boxhill searching for *A. nebulosa*, Zett., but then, my observations did not extend into the latter month. The life-history of this insect is also still buried in obscurity, and the discovery of the parents might lead to that of the young, examples of which I shall be very glad to receive for the purpose of figuring. The plant occurs very sparingly in South Devon, but all my investigations were barren of results.—JOHN SCOTT, Devonport: *29th November*, 1882.

Eumicrus rufus, Müll., at Hurst Green, Sussex.—Through the kindness of Mr. E. A. Butler, of Hastings, who presented me with the specimen, I have the pleasure of recording the occurrence of *Eumicrus rufus* at Hurst Green, a small village, one and a half miles from Etchingham Station on the S. E. railway, and about three miles from Hawkhurst. Mr. Butler took the insect on his little girl's dress, after she had been playing about for some time in a field, so that it evidently came out of the grass, and might probably be obtained by sweeping in the same locality. Its capture is interesting, as corroborating Mr. Champion's specimen, which he took in Richmond Park, and which has, I believe, up to this time, been the only recorded British specimen. The species is easily recognised by its rather short oval elytra, and almost globose thorax, neither of which are foveolate; the most curious point about it is its long metasternum, which makes the hind legs appear as if they came off the extremity of the body.—W. W. FOWLER, Lincoln: *December 9th*, 1882.

Myrmecoxenus vaporariorum at Birmingham.—In October last, I found this rare and interesting little beetle in some plenty in a hot-bed near here. It is somewhat remarkable that although I have examined hot-beds on the same spot year after year, I have never found *Myrmecoxenus* before, and that now it should turn up in numbers. The lesson seems to be that the more we work our old hunting-grounds the more productive they become.—W. G. BLATCH, 214, Green Lane, Smallheath, Birmingham: *December 15th*, 1882.

Review.

CATALOGUE OF THE TORTRICIDÆ OF NORTH AMERICA NORTH OF MEXICO: by PROFESSOR C. H. FERNALD (published in the Transactions of the American Entomological Society, Philadelphia, 1882). This is a valuable addition to the Lepidopterological literature of the United States, and cannot fail to afford great assistance to the rapidly increasing number of collectors and "scientists" who are giving attention to this interesting family. It has been carefully compiled by the author, after several years of patient and conscientious labour, during which he has made it his object to become personally acquainted with the types of all species described up to the date of publication. He has not spared himself the trouble of a journey to Europe for this purpose, and has, moreover, enjoyed exceptional opportunities of studying those types which have remained in various American collections.

The result of Professor Fernald's labours, so far as it has at present been given to the public, takes the form of a complete list of species, with full references to all synonyms, taken "in part from the valuable catalogue by Messrs. Staudinger and Wocke, but the greater part verified by reference to original works." To these are added, in all cases, the dates at which the different names were originally published.

We are promised, at some future time, a generic revision, based upon an arrangement of the material which the author has brought together from various parts of the world. Such a revision is undoubtedly much called for; the premature death of Monsieur Henri de Peyerimhoff having deprived us of the completion of his extensive studies, of which the preliminary results, published in the Annales de la Société Entomologique de France, in 1876, had encouraged the hope that a systematic arrangement of the *Tortricidæ*, which should exhibit some improvement upon the valuable, but not wholly satisfactory, lines laid down by Heinemann (Schmetterlinge Deutschlands und der Schweiz), was not at that time remotely distant. All Lepidopterists will wish Professor Fernald success in this undertaking. In the catalogue now under consideration, he divides the *Tortricidæ* into three sub-families: *Tortricinæ*, *Conchylinæ*, and *Grapholithinæ*, in which he accords to Heinemann's sub-genera the rank of genera. The first of these sub-families containing *Teras*, *Cacœcia*, *Loxotænia*, *Ptycholoma*, *Pandemis*, *Lophoderus*, *Sciaphila*, *Tortrix*, *Amorbia* (into which the genus *Hendecastema*, Wlsm., is properly sunk), *Synnoma*, *Œnectra*, *Cenopis*, *Dichelia*, *Amphisa*, *Capua*, and *Platynota*. The second consisting of the two genera, *Idiographis*, Lederer, and *Conchylis*, Treitschke. These genera will probably be admitted to form a well-defined sub-family, on account of the degree in which their neuration differs from that of other *Tortricidæ*—the second vein of the anterior-wings taking its rise on the outer third of the discoidal cell—whereas, in all other genera at present characterized, it arises as far back, at least, as the middle third. The remaining genera are grouped together in the sub-family *Grapholithinæ*, and these are, for the most part, the same which, in Heinemann's classification, are regarded as sub-genera of *Grapholitha*. The proposal to erect sub-families seems worthy of adoption, in preference to that of Heinemann's, as not open to the objections raised by those who advocate a scrupulous adherence to the strictly binominal system of nomenclature.

It is difficult to understand why the author has hesitated to adopt the practice in general use of making the terminations of the generic and specific names invariably agree with each other. His habit of employing a feminine termination for all the specific names, without regard to the genders indicated by the terminations of the generic names to which they are attached, is obviously incorrect and inadmissible, even although it may be as he claims in his preface, "the course adopted in nearly every list or catalogue of these insects which I have seen from Linneus down."

On the other hand, he scrupulously corrects Stephens' spelling of his genus *Lozotænia* to *Loxotænia*, although Stephens' error has been copied in Wocke's catalogue, and, almost without exception, in other works. He also adopts the correct spelling, *Conchylis*, in lieu of Treitschke's *Cochylis*, which has been frequently repeated by later authors.

I cannot entirely concur with Prof. Fernald in his extension of the genus *Proteopteryx*, Wlsm. The type of this genus, *P. emarginana*, has certainly a slight indication of a costal fold in the male sex, which should have been noticed in the original description, but this is not closely appressed, nor is it wide and conspicuous as in the genus *Pædisca*. The indentation of the middle of the apical margin of the anterior-wings is the chief character by which it may be distinguished. This indentation occurs in a limited degree (not to the same extent as in the typical species) in *Semasia? oregonana*, Wlsm., and *Pædisca resumptana*, Walk. (sp. ?), both of which our author includes in *Proteopteryx*, but the former of these two species has no costal fold, and the latter has the closely appressed wide costal fold of a *Pædisca*. *Anchylopera costomaculana*, Clem., also placed in the genus *Proteopteryx* by Prof.

Fernald, has the strongly indented margin of this genus, but, so far as I am aware, it has no costal fold whatever. Some revision will ultimately be required here unless the genus *Proteopteryx* should be recharacterized. A valuable addition has been made to this list in giving the names of the food plants of such species as have been observed in their larval stages. The very beautiful unpublished drawings, by Abbot, now in the British Museum, would afford some further information upon this branch of the subject.

With these few remarks, I commend this most useful catalogue of the *Tortricidæ* to the notice of all who are interested in the subject which it illustrates. It cannot fail materially to advance the study of the North American representatives of this family of the *Micro-Lepidoptera*. The results of the author's labours have already been widely circulated, not only in the Transactions of the American Entomological Society, but through the medium of Mr. A. R. Grote's check list of North American *Lepidoptera* (published about the same time in New York*), a work which is itself indispensable to all collectors.—WALSINGHAM, Merton Hall, Thetford: *December 8th*, 1882.

Obituary.

Archdeacon Hey.—On Wednesday, November 22nd, in his 72nd year, the Venerable Archdeacon Hey died suddenly at The Residence, York, of angina pectoris: although he had occasionally felt oppression in the chest, the ailment never assumed a serious form before the fatal attack, and in half an hour all was over. He was an enthusiastic Coleopterist; one of that diminishing band who form a connecting link with the old days of Curtis and Stephens, and in spite of his ever-increasing work, he always found some time to give to his favourite study.

He was fond of pointing out how his life might be divided into decades. In 1824 he was sent to school, in 1834 he took his degree, in 1844 he was made Head Master of St. Peter's School, York, in 1854 he was appointed an Honorary Canon of York and Vicar of St. Helen's, in 1864 he became Canon Residentiary, and in 1874 Archdeacon of Cleveland.

The *Hydradephaga* were his special study, and he thoroughly worked all the waters around York for this group: by far his best and most favourite locality was Askham Bog, from which he was perpetually sending good species to various collectors in different parts of the kingdom: not long since the writer of this notice had a day's work with him at Askham, when he went to work with his net (designed by himself and peculiarly suitable for working the bog) with an energy that many a man of half his years might have envied: he paid his last visit to this his favourite collecting ground, only last July, and had the satisfaction of once more taking specimens of the rarity he was always on the look out for, *Hydroporus Scalesianus*.† In his collection of insects he used to point with special pride to the original *Lissodema Heyanum*, bearing a label in Curtis' handwriting.

He took the greatest interest in the York Museum, and also in the meetings of the British Association.

His kindness and generosity to all who were in any way interested in his favourite pursuit will cause him to be long remembered and regretted by all Entomologists who had the pleasure of knowing him.

His son, the Rev. W. C. Hey, inherits his father's collections, and also his taste for *Coleoptera*.—W. W. F.

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* To be had of Mr. Henry Edwards, Secretary of the New York Entomological Club.

† A list of his chief Askham Bog beetles will be found in Ent. Mo. Mag., Vol. xviii, p. 7.

ON A NEW SPECIES OF *MOUHOTIA* (*SCARITIDÆ*).

BY GEORGE LEWIS.

In the January number of this Magazine, 1879, I noticed a new species of *Mouhotia* from Burma, and I am now able to bring forward another, the third in the genus, discovered by Dr. Hamand on the banks of the River Mekong. If I rightly understand the habits of those insects, they live much as *Craspedonotus* does in China on the banks of the Yang-tze; they burrow into the banks of rivers which run through large alluvial plains and then sit watching for prey at the orifices of their holes. To find *Craspedonotus* in China, you must follow up the Yang-tze for 500 or 600 miles when the soil becomes light and sandy. Near Shanghai all is mud, and it is the same on all large rivers near the mouth. The Cambodia river as far as Saigon is too muddy for large *Scaritidæ*. I visited the last place in 1880, and left some drawings of *M. gloriosa* with a resident in the hope of obtaining something like it, but hitherto there has been no result.

Mouhotia convexa, *sp. n.*

Nigra, prothoracis margine laterali basalique necnon elytrorum marginibus lateralibus late cupreis; elytris convexis, striis bilineatim punctatis, interstitiis planis, marginibus angustis. Prothoracis lineâ medianâ longitudinali nullâ vel obsoletâ.

Long. (*cum mandibulis*) 20 *lin.*

This species is the size of *M. Batesi*, but the difference of outline between the two species is very considerable. The head, thorax and the elytra especially are more convex; the thorax is much less constricted behind, and at the base measures 5 lines in breadth, while *M. Batesi* attains barely 4 lines there. The convexity of the elytra gives them a much narrower margin than in *M. Batesi*, and each stria (there are 9 or 10 in all) consists merely of a double line of punctures; the interstices are quite smooth and level. The elytral striæ are strongest at the sides and at the apex. In the region of the scutellum the striæ or points run gradually into single rows, and near the base of the wing-case they are almost obsolete. The thoracic medial line, which is very clearly defined in *M. Batesi*, has almost disappeared in *M. convexa*.

I am much indebted to the kindness of M. Blanchard, the well-known *savant* of Paris, for my example of this species, which is one of a fair series from Laos through which the river mentioned runs.

Mr. C. O. Waterhouse gives a figure of *M. Batesi* in his "Aid to the identification of Insects" for January, and has kindly promised to figure the present species in the part forthcoming in April. Of the two species here noticed, *M. gloriosa* comes nearest to *M. Batesi*.

Wimbledon: 17*th December*, 1882.

NOTES ON THE *TRICHOPTERA* OF UPPER CLYDESDALE.

BY KENNETH J. MORTON.

The following notes may be interesting, as giving some idea of the species of *Trichoptera* occurring in a district, the insect fauna of which is very imperfectly known. Limited spare time has restricted my collecting operations to the immediate vicinity of Carluke; all the species referred to below having, with the exception of one or two from Lanark Loch, been taken within a radius of three miles around this place.

The physical conditions of the area just indicated, are almost as diversified as could be expected within such narrow bounds, elevations ranging from about 200 ft. at the level of the Clyde, to over 1000 ft. in one part of a high-lying moorland tract. The Clyde, near here, is a moderately swift river (interrupted here and there with more slowly-running reaches), running through a warm and sheltered valley: in the two miles or so of its course, which I have worked, I have taken no fewer than forty species of *Trichoptera*. Several of its tributary burns intersect the district, and these are also tolerably rich; but their productiveness is evidently impaired in some parts by the water pumped from mines being discharged into them. But ponds and marshes are not very frequent, they almost all occur in the higher-lying parts, and are of small extent: there is a fair representation of the species affecting water in such conditions, but the dearth of individuals is marked. Lanark Loch, distant about six miles from here, doubtless produces a number of lacustrine species, but I have only been able to visit it on two or three occasions. It may be mentioned that limestone (the presence of which, as Mr. McLachlan has pointed out has a favourable influence on aquatic insect-life) is abundant in the Carluke district.

The *Phryganeidæ* are represented by three species: *Neuronia ruficrus*, Scop., one specimen; *Phryganea striata*, L., frequent at one pond; and *Ph. obsoleta*, McLach., common at most standing waters: the specimens larger and darker than others from the North of Scotland, which I possess.

Colpotaulius incisus, Curt., occurs in suitable places, but I have taken but few specimens.

Limnophilus rhombicus, L., rare. *L. marmoratus*, Curt., one specimen. *L. stigma*, Curt., rare. *L. lunatus*, Curt., *centralis*, Curt., and *vittatus*, F., are common. *L. auricula*, Curt., common in the fir woods around Lanark Loch; also taken in a wood near Carluke. *L. griseus*, L., one specimen, several years ago, but the species has not been seen since. *L. extricatus*, McLach., frequent, flies at dusk. *L. luridus*, Curt., one specimen. *L. sparsus*, Curt., frequent. *L. fuscicornis*, Ramb., two specimens, one on the Clyde, the other at a deep pond.

Anabolia nervosa, Curt., common on the Clyde and elsewhere. At a pond near here, during the afternoon of a fine day at the beginning of September of this year, I noticed several males taking short flights; numerous examples were resting on the tops of rushes quite exposed, several pairs being *in copulâ*.

Asynarchus cœnosus, Curt., two specimens, in August, at a moor-pool.

Stenophylax infumatus, McLach., several specimens on the Clyde, and one at a burn, in June. On the Clyde the species appears to be restricted to one spot where the water runs rather slowly; it is very difficult to dislodge from the hollowed-out banks where it conceals itself. To give a better idea of the nature of the locality, I may mention several insects that occur at the same place, viz.: *Goëra pilosa*, *Sericostoma personatum*, *Lype phæopa* and *Limno. fuscicornis*, the last-named appearing very much to resemble *infumatus* in its retiring habits. *S. rotundipennis*, Brauer, a pair (♂ ♀) on a burn near Carluke, in August, 1881, but I did not succeed in finding it this season. *S. stellatus*, Curt., swarms on the Clyde and elsewhere, appearing as early as 1st of June, and continuing to the end of September. *S. vibex*, Curt., one ♀ on the Clyde, 1st of June.

Micropterna sequax, McLach., and *lateralis*, Steph., are both apparently rare.

Halesus radiatus, Curt.—About the end of August last, this species literally swarmed at dusk, at two different burns; also occurs on the Clyde. *H. digitatus*, Schrk., a few specimens on the Clyde in October. *H. auricollis*, Pict., frequent on the Clyde in September and October; the examples are larger than any I have seen from the North of Scotland.

Drusus annulatus, Steph., a common insect at every stream; the only ♀ I possess was taken about the middle of May; I have seen males at the end of September.

Ecclisopteryx guttulata, Pict., very common at most streams.

Chætopteryx villosa, F., frequent on the Clyde in October.

Sericostoma personatum, Spence, not uncommon on the Clyde and elsewhere.

Goëra pilosa, F., common on the Clyde; it also occurs frequently at most of the other streams.

Silo pallipes, F., abundant at every stream.

Brachycentrus subnubilus, Curt., abundant on the Clyde, in some years appearing in myriads.

Lepidostoma hirtum, F., common on the Clyde.

Beræa pullata, Curt., and *B. maurus*, Curt., frequent at swampy spots on the banks of different burns.

Beræodes minuta, L., is rather common on a small burn at a place where there is little or no current, and where the margins are boggy and rush-covered.

Odontocerum albicorne, Scop., common on the Clyde.

Leptocerus annulicornis, Steph., frequent on the Clyde. *L. aterrimus*, Steph., very abundant; the var. *perfuscus* much the commoner form. *L. cinereus*, Curt., common. *L. albifrons*, L., abundant on the Clyde. *L. commutatus*, McLach., frequent on the Clyde; apparently partial to places where the water does not run very quickly. *L. bilineatus*, L., tolerably common on several streams.

Mystacides nigra, L., apparently rare on the Clyde. *M. azurea*, L., common. *M. longicornis*, L., in abundance at Lanark Loch, and very variable.

Œcetis ochracea, Curt., in profusion at Lanark Loch; also occurs rarely at some ponds near Carluke. (*Œ. lacustris*, Pict., not before recorded from the West of Scotland, occurs in Bute.)

Four species of the genus *Hydropsyche* occur on the Clyde. *H. pellucidula*, Curt., and *H. instabilis*, Curt., are frequent, the latter also occurring on two or three other streams; the males of these species are much given to wandering, and I have taken specimens of both flying wildly over hedgerows, in the evening, at long distances from running water. *H. guttata*, Pict., dances in swarms over the tops of the bushes in the afternoon sunshine and in the evening; the specimens are of large size and dark. *H. lepida*, Pict., is sometimes common, but irregular in its appearance.

Wormaldia occipitalis, Pict., one specimen at a small burn. *W. subnigra*, McLach., frequent at a small waterfall on one of the burns (a ♀ from the Clyde is referred to this species with doubt).

Plectrocnemia conspersa, Curt., a very common insect, and *P. geniculata*, McLach., occurs along with it frequently at one burn.

Polycentropus flavomaculatus, Pict., the most ubiquitous Trichopteron in the district. Of *P. multiguttatus*, Curt., I have taken a single ♂ on the Clyde.

Cyrnus trimaculatus, Curt., not very common.

Tinodes wæneri, L., common at two burns.

Lype phæopa, Steph., frequent at one place on the Clyde.

Psychomyia pusilla, F., abundant on the Clyde.

Rhyacophila dorsalis, Curt., is as annoyingly common in this district, as it appears to be elsewhere. *Rh. septentrionis*, McLach., very common at one burn about the end of May and during June. *Rh. obliterata*, McLach., common on most of the streams from the end of August to the end of October. The occurrence of three of the four recorded British species of this genus on the same burn (but, of course, at different times) is noteworthy.

Glossosoma vernale, Pict., common on the Clyde from April to October.

Agapetus fuscipes, Curt., common on one burn. *A. comatus*, Pict., very common on the Clyde.

The *Hydroptilidæ* find no place in my list; I cannot doubt that some minute representatives of this family do occur, but have, as yet, been overlooked.

The list, even for this immediate neighbourhood, cannot be considered nearly complete, and any one working over a wider area, and with more time at his disposal than I have, could very largely augment it; but, I think, the sixty-nine species enumerated above, justify me in coming to the conclusion that the southern part of the district, drained by the Clyde, is possessed of a very rich Trichopterous fauna.

Mr. McLachlan has very kindly confirmed for me such species as I had any doubt about, and Mr. J. J. King, of Glasgow, has assisted me in many ways.

Carluke, N.B.: 11*th December*, 1882.

NOTES ON NEW BRITISH *COLEOPTERA* SINCE 1871; WITH NOTICES OF DOUBTFUL SPECIES, AND OF OTHERS THAT REQUIRE TO BE OMITTED FROM THE BRITISH LIST.

BY THE REV. W. W. FOWLER, M.A., F.L.S.

(*continued from p.* 172.)

PSELAPHIDÆ and SCYDMÆNIDÆ.

BRYAXIS COTUS, Sharp.

The insects taken near Thornhill by Dr. Sharp, and distributed by him under the name of *B. Lefebvrei*, belong to a new species, and must stand in our list under the name of *B. cotus* (Ent. Mo. Mag., xii, 225).

EUPLECTUS DUPONTI, Aubé.

This French species was first taken in England by Mr. Lawson, near Scarborough: it is rather a flat insect, with the head broad at the sides; the male is more shining than the female, and has its head punctured only on the sides, and the thorax and elytra almost impunctate, whereas the female is not very shiny, and has the head rather thickly and plainly, and the thorax and elytra moderately thickly, punctured; the characters of the abdomen in the male also serve to distinguish it; Aubé (Monographia Pselaphiorum, p. 57) says that it is very like allied species, but is distinguished by the front fovea of the head being wider, and by its longer and more slender antennæ.

Euplectus piceus, Mots.

This species, recorded as new in Ent. Mo. Mag., xii, 225, is apparently synonymous with *Euplectus nigricans*, Chaud. *E. sulcatulus*, De Saulcy, is also synonymous with the same insect, as also is *E. Dennyi*, Wat. Reitter (Bestimmungs Tabellen der Europäischen Coleopteren, Part v, 1881, p. 525), gives the right synonymy.

Euplectus Abeillei.

Dr. Sharp records this insect (Ent. Mo. Mag., xii, 225) on the authority of M. De Saulcy: it is not, however, in Stein and Weise's catalogue, nor is it mentioned by Reitter (*l. c.*) among the numerous species of which he gives descriptions.

Euplectus Kirbyi, Denny.

This species has been considered as synonymous with *E. nanus*, Reich.; it was, however, again separated by Mr. Waterhouse as distinct (Ent. Mo. Mag., xvi, 123), on the ground that the furrows in the forehead are parallel in *E. nanus*, and converge strongly in *E. Kirbyi*. Reitter (*l. c.*, p. 525) refuses to admit *E. Kirbyi* as a separate species, unless Mr. Waterhouse can point out the specific differences of the male. I have type specimens of both insects, and they show a very marked difference in the sculpture of the head, which is generally considered to be a most important point in the *Euplecti*. Dr. Sharp, in his catalogue, considers *E. nanus*, Reich. (see Ent. Mo. Mag., viii, 84), and *E. Kirbyi* to be synonymous. Both Aubé and Denny make *E. nanus*, Reich., and *E. Reichenbachii*, Leach., synonymous, but consider *E. Kirbyi* a distinct species. Denny's figures of the two species (*E. Kirbyi* and *E. Reichenbachii*) are very distinct; Aubé's bear a close resemblance, but neither his figures nor his descriptions are always to be depended on.

EUPLECTUS MINUTISSIMUS, Aubé.

This very distinct species was taken in numbers by myself and the late Mr. Garneys in flood rubbish, near Repton, in June, 1879. Its very small size, linear shape, and spine at the apex of the abdomen of the male, will at once distinguish it from all our other British species. It differs so much from Aubé's description and figure (Psel. Mon., p. 59), that, considering it a new species, I gave it the provisional name of *E. Garneysi* (Ent. Mo. Mag., xvi, 158). M. Brisout, however, kindly compared it for me with Aubé's types, and, although admitting the discrepancies and the need of a fresh description, expressed his opinion that it was *E. minutissimus*, which opinion is endorsed by M. Reitter (*l. c.*, p. 90). It appears to be a rare insect on the continent, and has not been taken either before or since June, 1879, in Britain, and only in the locality mentioned.

Trimium brevipenne

Is the female of *T. brevicorne*, and cannot, therefore, stand as a species.

EUMICRUS RUFUS, Müll.

Two specimens of this species have occurred in Britain, one taken by Mr. Champion in Richmond Park (Ent. Mo. Mag., vii, 273), and one by Mr. Butler recently (Ent. Mo. Mag., xix, 190) in Sussex. It is a shining rufo-testaceous insect, with scarcely any pubescence, with no perceptible foveæ at the base of the thorax or elytra, and no punctuation, except very sparsely on the elytra. Its legs are long, and the long metasternum makes the hind pair appear to start almost from the apex of the body. I have compared Mr. Butler's specimen, which he very kindly gave me, with a type sent by M. Aubé to Mr. Matthews.

Scydmænus Sharpi, De Saulcy, and *Sc. glyptocephalus*, De Saulcy.

These two species—recorded by Dr. Sharp (on De Saulcy's authority), Ent. Mo. Mag., xii, 225, the former as allied to *S. rubicundus*, and the latter as really representing the *S. carinatus* of our list—are not included in the European catalogue, nor does M. Reitter, who is the latest authority, mention either of them, either as species or as synonyms.

SCYDMÆNUS PRÆTERITUS, Rye.

This species is allied to *S. Sparshalli*, Denny, but is easily distinguished by its darker colour, longer and less convex shape, &c.; it has the facies of a small *S. elongatulus* (Ent. Mo. Mag., ix, 6).

Scydmænus pumilio, Schaum.

This species appears to be identical with *S. minutus*, Chaud. Mr. Rye (Ent. Mo. Mag., ix, 18) strikes this species out, as the few supposed British exponents that he has seen are small *S. Sparshalli*. The synonymy of *S. Sparshalli* and its allied species (*S. helvolus*, Schaum, *S. præteritus*, Rye, and others) is most confused, and requires careful working out.

TRICHOPTERYGIDÆ.

Ptinella Proteus, Matth.

This species is identical with *P. testacea*, Heer. The latter name has the priority, and must be inserted instead of the former.

Ptinella pallida, Er.

It is very probable that this insect, which is generally regarded as a variety of *P. aptera*, Guer., will eventually prove to be a distinct species.

Trichopteryx convexa, Matth.

The name of this species must be altered to *T. convexiuscula*, Mots., which has priority.

TRICHOPTERYX FRATERCULA, Matth.

Easily distinguished from other species by the enlarged and peculiarly curved posterior angles of the thorax (resembling the bill of the puffin, *Fratercula arctica*), and also by the superficial sculpture of the same part. In the British list it comes just before *T. grandicollis*. Taken by Mr. Matthews near Gumley (Ent. Mo. Mag., xv, 65).

TRICHOPTERYX CANTIANA, Matth.

Differs from *T. lata* in its thorax being much less dilated at the sides, its shorter, more robust, and entirely black antennæ, its deep black colour, and very short pubescence. Taken by Mr. and Mrs. Wollaston near Tonbridge, and by myself near Repton (Ent. Mo. Mag., viii, 153).

TRICHOPTERYX LÆTITIA, Matth.

Allied to *T. fascicularis*, Herbst., but differs from that species in its smaller and more depressed thorax, shorter and pitchy-black antennæ, and in its conspicuously smaller size. Taken in Belgium, near Spa, by Miss L. Matthews, and described as a new species in Ent. Mo. Mag., ix, 189. First recorded as British by myself, in Ent. Mo. Mag., xvi, 160. Mr. Billups and several other collectors have taken the species, which is probably common.

TRICHOPTERYX CHAMPIONIS, Matth.

A very distinct species, distinguished by its narrow form and castaneous tint: it must be placed between *T. fascicularis* and *T. seminitens*. Taken in Wicken Fen; given to Mr. Champion by Mr. Harris, of Burton-on-Trent, who received them from a man living in the Fen district (Ent. Mo. Mag., xv, 64).

TRICHOPTERYX SEMINITENS, Matth.

Allied to *T. fascicularis*, but distinguished by the greater convexity of its form, the shining surface and remote sculpture of the thorax, and shorter piceous antennæ; allied also to *T. attenuata*, from which it differs in its larger size, much greater convexity, shorter antennæ, and in the sculpture of the thorax (Ent. Mo. Mag., xiv, 36).

TRICHOPTERYX VOLANS, Mots.

This species must be placed immediately after *T. sericans*, from which it differs in its larger size, much shorter pubescence, sculpture of thorax, and longer elytra. Taken by Mr. Champion in Scotland. (Ent. Mo. Mag., xv, 64.)

TRICHOPTERYX LONGICORNIS, Mann.

An old species, accidentally omitted. Distinguished by its long antennæ, and general sculpture.

TRICHOPTERYX EDITHIA, Matth.

Distinguished by its griseous brown colour and long pubescence, the peculiar form of the thorax, which is sub-quadrate, with the sides much rounded, and the long, slender, bright yellow legs and antennæ. Taken by Mrs. Wollaston, near Tonbridge. (Ent. Mo. Mag., viii, 152.)

TRICHOPTERYX LONGULA, Matth.

Differs from the allied species, *T. picicornis*, in its elongate oval form, its shorter and narrower thorax, longer and more slender antennæ, and closer and finer sculpture (Ent. Mo. Mag., viii, 152). Only four specimens of this species were known when it was introduced. It is certainly rare, but probably less so than is generally supposed, for I have taken it myself at Repton, at Lincoln, and at Gumley, always in a hot-bed.

TRICHOPTERYX CARBONARIA, Matth.

This species rests on a single specimen taken by Mr. Matthews in Thoresby Park, Nottinghamshire. It is allied to *T. picicornis*, but differs from that species in its paler and more slender antennæ, of which the eighth joint is linear and not incrassate, and also in the totally different sculpture of its thorax and elytra. (Ent. Mo. Mag., ix, 179.)

TRICHOPTERYX RIVULARIS, Allib.

Very near *T. Montandonii*, but distinguished by its more elongate form, and longer thorax, and by the sculpture of the latter. It is not an uncommon species. I have taken it in Lincoln, and it has occurred in other places. (Ent. Mo. Mag., viii, 152).

TRICHOPTERYX FUSCULA, Matth.

A very distinct species, apparently very rare: it is easily distinguished by its short quadrate form, and the long brown hairs with which it is covered. Taken by Mr. Matthews near Gumley. (Ent. Mo. Mag., viii, 152.)

PTILIUM MARGINATUM, Aubé.

This species is allied to *P. Spencei*, from which it may be distinguished by its usually greater size, the greater width and closer sculpture of the thorax, which is widest at the base, and has the basal margin evidently reflexed. Taken by Mr. Matthews and Mr. Crotch, in the Cambridgeshire Fens, 1868. (Ent. Mo. Mag., xiv, 36).

PTILIUM CALEDONICUM, Sharp.

Also allied to *P. Spencei*, but very distinct: its thorax is rather narrower than the elytra, much broader than long, with the sides rounded in front and much narrowed behind, without any channel. It is fusco-testaceous in colour. Taken by Dr. Sharp and Dr. Buchanan White, under bark of a dead Scotch fir at Braemar. (Ent. Mo. Mag., viii, 73.)

PTILIUM CÆSUM, Er.

A fine distinct species, easily distinguished by its wide form, large head, and the convergence towards the front of the lateral lines of the thorax: it is dark testaceous in colour. Taken by Mr. Crotch in 1870, in the Cambridgeshire Fens. (Ent. Mo. Mag., ix, 179).

PTENIDIUM ATOMAROIDES, Mots.

Easily distinguished from *Pt. evanescens*, Marsh. (*apicale*, Er.), by the smaller size of its head and thorax, and much longer and broader elytra. Taken by Mr. Crotch, probably near Brandon, in Suffolk. (Ent. Mo. Mag., viii, 152.)

PTENIDIUM KRAATZII, Matth.

This very distinct ant's-nest species is probably commoner than is supposed, and is very likely often confounded with *Pt. formicetorum*, Kr. It is, like that species, reddish in colour, but much darker, and has its elytra strongly punctured with large punctures, whereas the elytra of *Pt. formicetorum* are almost glabrous. Two specimens only (taken by Mr. Foxcroft, in Scotland) were known when the species was described (Ent. Mo. Mag., viii, 152). I now record it for the first time as English, having taken several specimens from ant's-nest rubbish from Buddon Wood, Leicestershire, where it is probably common.

Ptenidium Wankowiczii, Matth.

This species has been considered too close to *Pt. apicale* to be separated: it is, however, quite distinct, being much narrower, especially in the thorax, the four basal foveæ of which are distinct; in *Pt. apicale* they are obsolete.

Ptenidium turgidum, Thoms.

Of this very rare and very distinct species hardly any British specimens were known: some time ago, I found an example among some of Mr. Wilkinson's *Trichopterygidæ*, in the possession of Mr. Mason, and Mr. Matthews subsequently detected several others.

CLAMBIDÆ.

Clambus punctulum, Gyll.

This species must be omitted, the specimens on which Mr. Crotch introduced it being apparently small *C. minutus*. (Ent. Mo. Mag., ix, 8.)

(*To be continued*).

CIMEX OR *ACANTHIA*.

BY J. W. DOUGLAS.

"Under which king, Bezonian?"—*King Henry* iv.

In the "Wiener entomologische Zeitung" for December (vol. i, page 301), Dr. O. M. Reuter has an elaborate article on the controverted subject of the employment of the generic names *Cimex* and *Acanthia*, in which he refers to what has been written thereon in the "Annals and Magazine of Natural History," 1868, in the "Zoological Record," 1869, and in this Magazine xi, 186, and xvi, 172. He says truly that Linné had no idea of a generic type, as appears from the very general characters given to his genera, and yet, that although he divided his genus *Cimex* into sections, it may, nevertheless, be possible that he particularly ("gerade") intended the name for *lectularius*. This is Dr. Reuter's idea, but Linné could not logically have done so when he fenced *lectularius* with special discordant characters. Dr. Reuter, however, claims to retain the generic name *Cimex* for *lectularius*, not only on the ground of his idea, but because Latreille (having ignored or not having rightly comprehended the Fabrician type of *Acanthia*, which as Fabricius afterwards showed he intended to be *C. lectularius*, Linn), had intermediately instituted a genus *Cimex* for *lectularius* only;—and this is called obtaining priority! At most, however, the genus is *Cimex*, Latr., *nec* Linn.;—a chaotic anomaly. As followers of Latreille are cited Laporte, Herrich-Schäffer, Spinola and Stål (to whom Westwood and Pascoe might have been added); and as followers of Fabricius, Fallén, Burmeister, Flor and Fieber (to whom might have been added Anton Dohrn, J. Sahlberg and others).

Dr. Reuter now contents himself with saying "Wenn eine Gattung in mehrere zerlegt wird, so ist der ursprüngliche Gattungsname für eine der Tochter-Gattungen beizubehalten, und zwar für diejenigen Arten, welche der erste Demembrator mit diesem Namen bezeichnet hat." On a former occasion he went somewhat further and said "I think the author *first* making such a division of a genus should have the privilege to employ the name formerly belonging to the entire complex for such of the new genera as he pleases" (Ent. Mo. Mag. xvi, 173). I have already said I do not admit such procedure is equitable, neither has it scientific accuracy: moreover, *Cimex* of Linné, being a genus of such proportion as to include all the *Gymnocerata*, the name is now applicable only as a great divisional appellation and cannot be justly appropriated to any of the separated genera; if so used it is not, at any rate, *Cimex* of Linné, but is a misappropriation and misleading. I apprehend this is not the only misapplication of an old generic name.

The question of *Acanthia versus Salda*, which similarly has adherents for or against respectively, as cited by Reuter, turns in some aspects partly upon the solution of the previous question *Cimex* or *Acanthia*.

While I still differ from my respected friend Reuter, I can yet agree with him in saying "Wir stehen ja noch nicht am Ende der Wissenschaft." Names are only appliances and outworks that Science uses in erecting her temple, yet it is rationally important for progressive stability that revision, restoration, and addition should be made on just principles. What constitutes a genus is still a matter of individual opinion: the rage is to magnify specific differences to generic proportions, in which process there is a race for priority, and thus new names are created to-day only to be abolished to-morrow—sometimes by the author himself. So far from being at the end of science we are yet but at the beginning. There is no finality in science. Doubters of current doctrine may have a wider and truer basis of faith than the absolute believer of the period; the scepticism of one generation becomes the orthodoxy of another, and this, again, the starting-point for the acquisition of new insight.

8, Beaufort Gardens, Lewisham:
26th December, 1882.

DESCRIPTION OF THE LARVA OF *DICYCLA OO*.

BY WILLIAM BUCKLER.

The furious salt gale of the 29th of last April damaged the trees in most localities to such an extent, that it was a hopeless task to go beating for the larvæ usually taken by that process in May; but, of course, there were some trees so situated as to be guarded by high ground from the stroke of the blast, and from one such oak tree my friend, Mr. Hellins, was fortunate enough to obtain the larva of the above named species.

As far as we know, neither the larva nor the imago had been taken in Devonshire before, so it is an addition to the local fauna of that county.

When first taken, 19th of May, it was not come to full growth, being less than an inch in length, and was preparing for a moult, so that its appearance puzzled Mr. Hellins, who sent it to me as perhaps the young stage of some *Tæniocampa*, which he had forgotten, and in this, without closely examining more than the first two segments protruding from some leaves and portending a moult, I acquiesced; however, an examination of the larva after the completion of its moult, and further correspondence, soon convinced me it was no *Tæniocampa*, and reference to a copy which I had by me of Hübner's figure of *D. oo*, showed me at once that I had at last obtained an example of that desideratum.

The moult took place during night or early in the morning of May 22nd, and in course of that morning I saw the larva feeding well as it lay quite openly exposed to view, though afterwards it kept itself more secluded, both by day and night, amongst the leaves of the oak spray provided for it, but, so far as I could see, without spinning them together, and it became full grown by the 27th, and went to earth on 29th; and the imago, a male, appeared on the 8th of July.

Very soon after the moult it was nearly an inch long, and when full-grown and stretched out 1 inch 4½ lines in length, very cylindrical, the head being only a trifle less than the second segment, and the thirteenth very little tapered, the head full and rounded, jet-black and glossy, the ground-colouring of the body was also jet-black above as far as the anal flap which was brown, and dark brown on the belly; the plate on the second segment quite as glossy as the head; the rest of the smooth skin had but a very slight gloss; a pure white dorsal stripe began rather narrow on the plate and thoracic segments, and from thence much broader on all the others, but on each of them was contracted in the middle and divided so as to form a series of long elliptical marks, the very thin sub-dorsal line of pure white began with two isolated spots on the side margin of the neck plate, and thence ran uninterrupted to the end of the anal flap; the broad spiracular stripe of rather yellowish-white was on the third and fourth segments interrupted deeply on its upper margin, and from them passed along of uniform breadth as far as the anal legs, and having a thin line of dark grey running through the middle, on which were the spiracles of red-brown finely outlined with black; the very small tubercular dots of pure white ranged in threes on either side of the back and singly above and below the spiracular region on each segment; the anterior legs were black, the ventral and anal legs brownish-green and semi-pellucid; the thoracic wrinkles and segmental divisions showed black upon the white stripes and lines.

Just before the larva was allowed to enter the earth it had lost its perfect black ground on the body, which had become somewhat of a brownish-green.

The cocoon, found about three-quarters of an inch below the surface of the earth, was of oblong shape, the diameters 11 lines by 8, it was composed of earthy particles lightly held together with a few threads, and though smooth inside, was without any perceptible lining of silk.

The pupa-skin was 7 lines long, very stout in proportion across the thorax, the abdominal segments tapered to the rounded tip furnished with two very fine straight and pointed spines, smooth in all its parts; of a dark warm brown colour and glossy.

Emsworth: *December 6th*, 1882.

New localities for Trioza crithmi, F. Löw.—Having had occasionally a few hours to call my own whilst in this neighbourhood, I paid some visits to the rocks under Plymouth Hoe, and there I found that the samphire grew tolerably plentiful. A very superficial examination of the plant revealed to me the fact that the above named species was there in abundance in all its stages. From July until near the end of August their numbers did not seem to diminish, although I took but few merely for the sake of the locality. A little later on in the season, my friend, Mr. Bignell and I made an excursion to a place called Wembury, and there also amongst the cliffs we found it, but sparingly. On our way thither, and the road is a rough one, we examined a large quantity of *Artemisia absinthium*, growing on both sides of a hedge on a farm on the Langdon Hall estate, in the hope of taking *Aphalara artemisiæ*, but there was not any sign of it, although the locality seemed a very likely one.—John Scott, Devonport: 19*th November*, 1882.

[Mr. C. W. Dale informs me that he found *Trioza crithmi* this year in the Isle of Portland.—J. W. D.]

The early life of Psylla pyricola, Först.—Up to the present time I have spent over 140 days here, out of which there have not been more than 20 fine ones. When the weather was fine and the time not otherwise occupied, a ramble was taken with more than ordinary gusto, and being desirous of becoming acquainted with the *Psyllidæ* on pear trees, in the hope of getting *Psylla pyri*, Linn., if it was really to be found in Britain, or at least, here, and Mr. Parker, Manager of the Royal Hotel, having very kindly given me an introduction to Mr. Brighton, head-gardener at Mount Edgcumbe, I shortly afterwards waited upon that gentleman, who at once gave me permission to wander about the grounds and gardens of the estate whenever I pleased. I accordingly paid several visits to the place between August and October, but all my searching failed to lead to the capture of *P. pyri*. On some of the pear trees, however, *P. pyricola*, Först., actually swarmed, and having beaten a few of the nymphs into my umbrella I began next to examine the leaves. On them I soon discovered the ova laid irregularly along each side of and on the midrib itself They are of a deep yellow colour, somewhat elongate, narrower or almost pointed at one extremity. When the young quit the ova they are pale oval bodies with somewhat thick legs which they scarcely seem to know what to do with, but in a day or two they get used to them and run about somewhat actively. In the meantime they have increased in size and have indications of some dark marking on the head and down the back. I also observed that the leaves were finely perforated on the upper surface, from which exuded a secretion which I tasted and found to be very sweet; the young in all stages and in numbers might be seen evidently feeding upon and enjoying it. As the larvæ grow older they become of a greenish-white colour, knobbed hairs may be detected around the sides of the abdomen, and a few simple ones on the front of the head; the elytra-lobes now begin to be distinct; two lunate patches appear on each side of the crown, the eyes are pale purple, the base of the abdomen becomes brown and at the junction of three or four of the segments is a small dark spot on each. On changing to the nymph-state the entire creature becomes of a more or less dark brown colour, and the front of the head rounded, along which, between the antennæ, are a few short hairs; the crown is divided down the centre by a pale greenish or yellowish line, and has posteriorly two curved ones of the same colour uniting with the central one and forming an anchor-shaped character; along the inner margin of the eyes there is also a pale streak, and on each side the centre near the posterior margin a triangular black-brown patch; the antennæ are pale green; two basal joints slightly fuscous; 1st joint with a short rigid hair at its apex, on the inside. Eyes purple; pronotum yellowish or greenish with about four large and two or three other small brown spots of irregular shape down each side of the centre. Elytra-lobes dark brown, darkest next the suture separating them from those of the wings; costal margin with two short hairs, one near the base pointing in a forward direction, the other near the middle. Legs pale or yellowish-green; tibiæ, 2nd pair with two knobbed hairs on the outer margin. Abdomen frequently clear emerald-green at the base (? sexual); incisions of the first one or two segments narrowly brown on each side of the centre, followed by a large cuneate patch of dark brown; margin with about seven knobbed hairs on each side. Length about ¾ line (Paris).—Id.: *December 2nd*, 1882.

Great destruction of Pieris brassicæ by Apanteles.—From the injury sometimes done by larvæ of *Pieris brassicæ* and *P. rapæ* among cabbages, I presume the circumstance I am about to relate is very exceptional, as were it otherwise, these butterflies would hardly survive the exterminating process.

Having by mistake failed to preserve specimens of *Apanteles glomeratus* for my collection, I last summer determined to supply the deficiency; and hearing that a few larvæ of *Pieris brassicæ* had been found in the garden and destroyed, I sought for more, finding only nine. Of these one died, while from *all the others* emerged larvæ of the parasite, none of which were stung by any hyperparasite. Partly by counting and partly by estimate I arrived at 230 as the number of the cocoons, all but one or two of which produced perfect insects.—J. E. Fletcher, Worcester: *December*, 1882.

Notes on Tenthredinidæ.—On p. 127, vol. xviii, of this Magazine, I recorded *Nematus salicis* as among the species possessing the power known as mixed-parthenogenesis. I should have written *N. melanocephalus*, Hartig. The error arose from a brace of wrong determinations several years old, when specimens of *N. melanocephalus* were named *salicis*, and actual *salicis* was named *melanocephalus*.

From my experience, it would seem that only a part of the green species of *Nematus* are capable of parthenogenesis—those whose larvæ have green heads varied more or less with dark stripes or blotches, and feed solitarily. The group whose larvæ have the head black and the second and last two segments orange, and live gregariously, have, at least in several trials I have given them, failed to oviposit in a virgin state.

When some two years since I was breeding *Nematus curtispina* from virgin females, I put such a ♀ in a cage together with several males, and placed them in the sun, watching them from time to time during three or four days. In the peregrinations of the creatures to and fro, whenever any males crossed the path of the ♀ they passed her by without seeming to heed her; but their treatment of their own sex was very different. Whenever two or more males met they wheeled about and brought their hind body into collision, appearing to wrench with their cerci the corresponding organs of each other. This they did repeatedly before separating. Sometimes four or five were thus tussling together. The effect was rather ridiculous, the more so, that none seemed the worse for the battle.

During the past season saw-fly larvæ were strikingly scarce. The only exception to this that I met with was *Nematus salicivorus*, Cam., a species usually only moderately common, which was so plentiful here in the autumn that few leaves of any *Salices* were found untenanted by one or two of its larvæ. *N. curtispina*, on the other hand, which is generally the commonest of the solitary-feeding green *Nemati*, was so scarce, that I could only find three larvæ.—Id.

Notes on the Lepidoptera of the Pyrenees in September.—It would appear from a glance through the pages of the Magazine, that British Entomologists have not often visited the Pyrenees, or, at all events, if they have done so, have not recorded in its pages the species they captured or observed; I am, therefore, induced to send an account of those species I met with during a visit there in the beginning of September.

At Biarritz, where I arrived on the 29th August, I found on the coast, owing, in a great measure, no doubt, to its exposed situation, the flora of a somewhat scanty description, and the *Lepidoptera* proportionately limited. Flying over a species of *Erica*, then in flower, I noticed the following *Lycænæ*, viz.: *L. bœtica*, *argiades*, and *Alexis*.

Here and there, along the sea-shore, were patches of the spurge *Euphorbia paralias*, off which I took the larvæ of *Deilephila euphorbiæ* in every stage of growth; I found they fed equally well on *Euphorbia amygdalöides*, a common plant in nearly all the valleys of the Pyrenees.

A few miles south of Biarritz, I took several *Rhodocera Cleopatra*, but as I did not again meet with this species, I concluded that it did not occur much above the sea-level in the Western Pyrenees.

I reached Pierrefitte-Nestalas (1665 ft. above the sea) on 1st September, where I remained several days, exploring the valleys in various directions, with the following result:—*Papilio Machaon*, *Pieris Daplidice*, not uncommonly; *Leucophasia sinapis*, generally distributed and common; *Colias Hyale* and *Edusa*, sparingly;

Rhodocera rhamni, *Polyommatus Dorilis*, *Lycæna bætica* (generally distributed, but never common), *argiades*, *Arion* (one specimen only), *Agestis*, *Adonis*, *Argiolus*, *Corydon*, and *Alexis*; *Vanessa c-album*, *urticæ*, *Antiopa*, and *Atalanta*, occurred sparingly; *Melitæa Dia* and *Parthenie*; *Argynnis Lathonia*, *Adippe*, *Erebia Tyndarus*, *Satyrus Hermione*, *Pararge Mæra*, *Megæra*, and *Ægeria* were all more or less common; a few specimens of *Syrichthus alveus*, *Hesperia comma* and *linea*, completed the list of butterflies.

Callimorpha Hera was not uncommon flying in the bright sunshine; and at rest on rocks, *Gnophos obfuscaria*, *Cidaria immanata*, and *Acidalia degeneraria* were to be met with occasionally.

On one warm evening, at the lamp outside the hotel at Pierrefitte, I noticed the following:—*Selenia lunaria*, *Rumia cratægata*, *Boarmia rhomboidaria*, *Heliophobus popularis*, *Apamea Dumerilii* (Duponchel), and *Steganias permutaria* (Hübner).

On the stone walls in the valley of Lesponne, I found *Polia chi* and *Bryophila glandifera*, and in the crevices, suspended in some numbers, the pupæ of *Vanessa c-album*, and occasionally those of *Vanessa Atalanta* and *Pararge Megæra*.

On the 7th September, I ascended, from the village of Gripp, the Pic du Midi de Bigorre (9439 ft. above the sea). The path is a good one to the summit, and the ascent an extremely easy one. On leaving the valley (about 5000 ft.), butterflies, including *Parnassius Apollo*, *Argynnis Lathonia*, and *Lycæna bætica*, were somewhat numerous, but they very soon diminished in numbers. At 6000 ft. I noticed but one species, viz., *Erebia Manto*, much worn, and a solitary full-grown larva of *Chœrocampa porcellus*. Beyond this elevation all insect life seemed to cease.

Although somewhat disappointed from an entomological point of view, in other respects the excursion was an enjoyable one, for on the following morning I witnessed a beautiful sunrise from the top of a mountain, which, from its isolated position, affords one of the grandest views in the Pyrenees.

From the summit, as far as the eye could reach, scarcely a vestige of snow was to be seen in any direction, except on the highest mountains; two days later (12th September), however, the weather became very unsettled, and a complete change came over the scene, the higher slopes of all the mountains being then completely covered with a mantle of snow.

Continuous rain falling in the valleys rendered further collecting out of the question.—A. H. Jones, Shrublands, Eltham, Kent: *17th November*, 1882.

On the variation of the sizes of Lepidopterous eggs laid by the same female, and other notes.—Some time ago I corresponded with Mr. W. H. Harwood on the question as to the eggs of *Macro-Lepidoptera* varying in size, and he mentioned instances, chiefly among the "Prominents," where he had observed some difference in the size of eggs laid by the same female; this difference he had been accustomed to associate with the sex of the future imago, the larger eggs being expected to result in female moths, the smaller in male, but I am not aware that he had tested this theory very exactly: he also furnished me with the experience of another entomologist, who had noted that the first-laid eggs of Hawkmoths are larger than those which follow. These observations interested me much, and I meant to pursue them with some care, but so far I have not done what I wished, and all I can now add is this—last June I captured an impregnated female of *Sm. populi*, and, by shutting her up in a large paper-lined box, managed to secure all her eggs to the number of 230 or thereabouts; I had removed and given away most of them before she had quite finished laying, but luckily retained a few of the earliest, and when I came to compare these with the last half-dozen that left the ovipositor, the difference in size was immediately apparent, and on measuring them with the micrometer I found the last were just two-thirds of the size of the first: to have made this observation of more value, I ought to have measured the eggs as they came each day (I think she was about five days in getting rid of all her burden), but I did not think of this in time; neither shall I be able to know which sex of the moth these small eggs would have produced, for having to leave home before the larvæ were full fed, I was obliged to commit them to the care of a youngster whose conscience was not tender on the point of feeding them, so that on my return I found them all dead.

There is another question that has occurred to me, but which I cannot answer for certain; does a female moth, which from any cause has not reached the usual size of the species, lay the same number of eggs as a full sized moth, her eggs being like herself under full size? or does she lay a smaller number of full-sized eggs?

I believe Mr. Harwood and myself both inclined to the latter view. A third question with regard to eggs is this, Do eggs of the same species vary in colour? or do they always go through the same changes of colour in approaching maturity? Mr. Buckler and myself have noted a most decided variation in the eggs of *O. antiqua;* often they are of a dirty whitish hue with central brown spot, but sometimes we have met with batches which were quite reddish-brown all over; I believe, too, the eggs of *D. vinula* vary considerably in the depth of their brown colouring. I have notes of a few eggs of *H. Sylvinus*, which I once secured; when laid they were all of a dull white, and most of them remained so, with the exception of a tinge of yellow, which came over one side; but one egg became deep yellow all over, and the larva from it when hatched was of a much deeper yellow than the rest, but I did not manage to rear it so as to see whether this difference remained throughout its growth. I have also notes of various batches of eggs of *C. brumata*, which did not all seem to go through the same changes of colour, some of them not showing the dark hue which others put on at the last.

The average number of eggs laid by each species is a matter not always to be ascertained easily; I once counted 1200 as the number laid by *T. fimbria*, and about the same number in a batch laid by *T. pronuba*, and these are the highest figures I ever knew; something over 200 is I fancy a very general score.

To any one who possesses a microscope the examination of newly-hatched larvæ furnishes a very curious study; Mr. Scudder, some years ago, pointed out in the pages of this Magazine (vol. viii, p. 122) the value of observations on this stage in the life of an insect, but without going very deeply into the signification of the structure of what he called the "embryonic larva," one cannot but be greatly interested with the details which a magnifying power of 25 or 50 diameters will reveal. Thus, I found that the young larva of *Sm. populi* has its skin thickly set with fine bi-forked hairs, like double fish-hooks, the anal horn being similarly ornamented, whilst the head has only a few simple hairs; the young larva of *A. alni* has a most curious arrangement of dorsal tubercles on segments 5—8, but this will probably be noticed more at large in a future paper.

Dr. Chapman has fully confirmed my observations on the varying number of moults undergone by the larva of *O. antiqua*, some individuals change their skin three times, some four times, and others five times ; and he has gone further, and shown that the larva, which is to result in a female moth, has one moult more than the male ; the male larvæ moult either three or four times, the females either four or five times ; we are now anxious to extend this investigation especially among the species that have hairy larvæ, and to try to settle what sort of treatment and surrounding conditions tend to lessen or increase the number of moults in the larva stage ; *A. caja* is a species with a reputation for numerous changes of skin, but being a hibernator is not easy to carry through.

It has been before recorded that the pupæ of some butterflies vary in colour with the object to which they are attached, but Mr. Harwood surprised me a good deal by sending me two pupæ of *Cymatophora Or*, which were quite unlike in colour ; the pupa obtained from a larva captured near Colchester was black, but the pupa sent to him from Scotland was quite reddish-brown ; and this difference he found to exist almost constantly between the English and Scotch pupæ, a very few of the former showing a tendency to the lighter colour.

During the past summer I tried, with Dr. Chapman's help, to settle the origin of the yellow dust in the cocoon of *B. neustria*, but neither of us was able to see the larva in the act of ejecting or applying this yellow paste : I cut open a larva, which had died without spinning, and found two stoutish deep yellow threads in its body, which I conjectured might be vessels meant to secrete this paste, but my knowledge of anatomy is too vague to enable me to speak with certainty.

These notes are very slight, mere hints, indeed, but they seem to me to indicate several lines of research, for which the *Macro-Lepidoptera* offer the best opportunities ; and since butterflies and moths will always attract a very large share of attention from the world of Entomologists, I want to show that beginners can still find ground open to them, in which to make their mark, by filling up records yet left blank after all that has been written by their predecessors.—John Hellins, Exeter : 19*th December*, 1882.

Argynnis Dia near Tunbridge Wells.—This insect was taken some years ago by Mr. J. C. Arnold, of Hastings, but the species was not recognised till now. The circumstances under which it occurred were as follows. About the year 1876 Mr. Arnold was collecting a few butterflies and moths, when he observed two small fritillaries flying near each other, and caught them both. He took them home and set them, supposing they were the " Pearl Bordered." But this year taking some " fresh specimens," as he supposed, he threw away one of them, and was about to discard the other, when he observed, to his surprise, that though he had taken both *A. Selene* and *A. Euphrosyne*, the markings of this insect differed materially from both of them. He, therefore, wrote to me to know whether this specimen could be *Argynnis Dia*, since it agreed with Coleman's short notice of that species.

As I had no description at hand, and no specimen of *A. Dia*, I wrote asking him to consult Mr. C. G. Barrett. Mr. Barrett at once answered, that from the description and drawing forwarded, it was almost certainly *Argynnis Dia*. To make sure I wrote to Mr. Meek, who at once forwarded three continental specimens.

The insect captured by Mr. J. C. Arnold agreed with these in every respect, the only difference being that Mr. Arnold's specimen was somewhat faded.

With respect to the time of occurrence, Mr. Arnold tells me he took *Euthemonia russula* and *Argynnis Adippe* the same day, but does not know the date, this would point to the early days of July, or possibly to the latter part of June. The specimen was taken on heathy ground in Sussex, somewhere near Tunbridge Wells. He does not remember seeing any other small fritillaries that day. He does remember that he noticed the dullness of the under-side at the time, but thought it was owing to the specimens having been for some time on the wing. This circumstance makes him certain of the exact locality in which he caught them.

I may add, that I have looked over Mr. Arnold's collection, which consists of the more conspicuous English *Macro-Lepidoptera*—there were no other rarities among them.—E. N. Bloomfield, Guestling Rectory: *26th December*, 1882.

[This is not the first time that we have heard of the occurrence of *Argynnis Dia* in this country, though to many of our younger readers the announcement will have all the charm of novelty.

The chance of any error through the transposition of specimens seems precluded by the following considerations:—1st, The captor has never purchased any butterflies at all; 2nd, he has never been abroad, nor received any insects from abroad; and 3rd, he has never exchanged insects.

There is, however, still the possibility of the insect having been accidentally introduced.—Eds.]

Obituary.

George Wailes died at his residence, Gateshead, on the 30th October, 1882, in the 80th year of his age. In him we have lost one of those zealous Entomologists who could speak with the authority of more than 50 years' personal experience.

J. F. Stephens, in his "Illustrations," quotes observations of George Wailes as to the appearance of many insects in the neighbourhood of Newcastle-on-Tyne, from the year 1828 forwards. This would imply that he had been an active collector and observer of insects for some time before 1828.

George Wailes was not prolific as an author, and his Catalogue of the *Lepidoptera* of Northumberland and Durham, which appeared in 1858 in the Transactions of the Tyneside Naturalists' Field Club (noticed in the Entomologist's Annual for 1859, p. 169) was his longest work. His remarks therein on the specific identity of *Polyommatus Artaxerxes* and *Agestis* are of extreme interest; a copious extract of these notes was reprinted in the pages of the Zoologist for 1858, pp. 6278-6281. Hagen, in his Bibliotheca Entomologica, only enumerates twelve productions from his pen, but there are several minor notes of his in the early volumes of the Entomologists' Weekly Intelligencer. His very last notice in 1860 on *Bombylius major* reminds us that one of his earliest essays was on the characters of the European *Diptera*, from Meigen's Systematische Beschreibung, which appeared in the Magazine of Natural History for 1832.

He certainly excelled as a letter writer, his neat hand-writing, and the amount of geniality he threw into the subject, rendered the arrival of a letter from him an unfailing source of pleasure.

He was a solicitor, and I remember how on one occasion he remarked that in his early Entomological career he had much neglected the smaller moths, but had excused himself on the plea that "De minimis non curat *lex.*" But afterwards he devoted much attention to the *Micro-Lepidoptera*, and was one of the first to breed the little *Cemiostoma* of the *Genista tinctoria*, now known as *Wailesella*. For many years he was the Conservative registration agent for South Northumberland.

More than twenty years ago Mr. Wailes began to be afflicted with deafness, and this infirmity increased to such an extent as to debar him from his usual intercourse with his friends. When unable to continue his Entomological pursuits, he turned his attention to horticulture. He was twice married, but had no family.—H. T. S.

ENTOMOLOGICAL SOCIETY OF LONDON: 1*st November*, 1882.—H. T. STAINTON, Esq., F.R.S., President, in the Chair.

Mr. Jenner Weir exhibited two immature examples of a species of *Conocephalus*, found living in Messrs. Veitch's hot-houses. He thought they were probably *C. ensiger*, Harris, an American species.

Mr. Billups maintained that the beetles submitted to him as having caused damage to beer casks in Rangoon, were *Tomicus Saxeseni* (*cf. ante*, p. 120 and p. 144).

Mr. Pascoe exhibited a curious spider's nest from Sardinia; it consisted of a silken bag partially covered with small stones, and was formed close to the ground.

Mr. George Lewis exhibited three species each of the families *Histeridæ*, *Syntelidæ*, and *Lucanidæ*, illustrating his remarks on the *Syntelidæ*, as given in the Ent. Mo. Mag., *ante* p. 137.

Mr. Butler communicated the concluding portion of his paper on the *Lepidoptera* of Chili, collected by Mr. Edmonds: this part comprised *Micro-Lepidoptera*, and supplementary *Noctuidæ*, &c.

December 6*th*, 1882.—The President in the Chair.

Mr. E. A. Fitch exhibited, on behalf of Mr. Bignell, examples of *Platymetopus undatus*, the new British Homopteron noticed in Ent. Mo. Mag., *ante* p. 155.

Mr. Meldola exhibited a small moth in bad condition, sent by Dr. Fritz Müller, from Brazil, interesting because Dr. Müller assured him that it had been seen to deposit living larvæ, and hence was viviparous.

The Rev. H. S. Gorham exhibited specimens of *Cryptophagus validus*, found on beer casks in his cellar in Sussex; he had found larvæ feeding on a fungus on the casks, and thought they were those of the beetle.

Lord Walsingham exhibited examples of *Niptus hololeucus*, sent to him from Scotland, and which were reported to have damaged silver plate; at any rate, there were holes in the plate on which the insects were found; he suggested that there might be some corrosive property in the fæces of the insects.

Sir S. S. Saunders exhibited and reported upon fig-insects from Madagascar, collected by the Rev. W. Deans Cowan; the remarkable thing about them was that they only had four legs, the intermediate pair being obsolete. He also read a letter from M. André respecting the terminal segments of *Halticella*.

Professor Westwood communicated notes on M. Giraud's statements respecting the *Eurytomidæ*.

Mr. Cameron forwarded descriptions of ten new species of *Nematus* from Scotland.

Dr. Sharp sent a revision of the genus *Tropisternus* in the *Hydrophilidæ*.

Mr. Meyrick sent an elaborate memoir on the classification of the *Tineina*, in which he attempted to shew that schemes based upon European forms only, will not bear the test of scrutiny, when applied to those of Australia, New Zealand, &c. He also dwelt largely on the importance of structural characters in *Lepidoptera*, as opposed to those ordinarily taken from markings, &c.

January 17*th*, 1883.—Anniversary Meeting. The President in the Chair.

It was announced that the prize of £50, offered by Lord Walsingham, for the best essay on *Sclerostoma syngamus* (see notice of meeting for October 1st, 1879, vol. xvi, p. 140), had been awarded to Dr Mégnin, of Paris (two competitors); no essay regarding *Strongylus pergracilis* had been received.

The following were elected Members of Council for the ensuing year, viz.:—J. W. Dunning, M.A., F.L.S., E. A. Fitch, F.L.S., F. D. Godman, M.A., F.R.S., Rev. H. S. Gorham, F. Grut, F.L.S., W. F. Kirby, R. McLachlan, F.R.S., J. W. May, K.N.L., F. P. Pascoe, F.L.S., E. Saunders, F.L.S., J. W. Slater, H. T. Stainton, F.R.S., and C. O. Waterhouse.

The following officers were subsequently elected, viz.:—President, J. W. Dunning; Treasurer, E. Saunders; Secretaries, E. A. Fitch and W. F. Kirby; Librarian, F. Grut.

The outgoing President read an address, which was ordered to be printed, and the meeting terminated with the usual votes of thanks to the officers for their services during the past year.

ANNOTATED LIST OF BRITISH *ANTHOMYIIDÆ*.

BY R. H. MEADE.

(*continued from p.* 148).

20. PHORBIA, R. Desv.

Anthomyia, p. Meig., Schin., Macq., Walk.
Aricia, p. Zett.
Chortophila, p. Macq., Rond.

Gen. ch.—Eyes bare, contiguous or sub-contiguous in the males, remote in the females; arista tomentose or bare; face slightly prominent; abdomen depressed, oblong, or linear; alulets small, with equal-sized scales; wings with the anal veins prolonged to the margin; legs black.

1. FLOCCOSA, Macq., Rond.
   floralis ?, Fall.
2. TRANSVERSALIS, Zett.
3. PUDICA, Rond.
4. DISSECTA, Meig.
5. INCOGNITA, Rond.
6. LACTUCÆ, Bouché.
7. OBSCURA, Macq.
8. MUSCARIA, Meig.
   brevicornis ?, Zett.
9. HISTRIO, Zett.
10. CILICRURA, Rond.
    fusciceps ?, Zett.
11. TRICHODACTYLA, Rond.
12. FLORILEGA, Zett.
13. IGNOTA, Rond.
14. CEPETORUM. sp. n.
    ceparum ?, Meig.
    antiqua, p. Schin.
15. NEGLECTA, sp. n.
16. EXIGUA, sp. n.
    parva ?, Desv., Macq.

This genus contains a rather heterogeneous collection of small flies, including all those black-legged species whose males have contiguous eyes, which cannot be placed in any of the preceding genera.

Several small species are embraced in this group which are very difficult to determine, as they are very much alike, and do not possess any very marked distinctive characters. Several different species have, I believe, been described under the same name, and I think that the same species may have been described under different names; so that it is very difficult to arrive at just conclusions. The females of distinct species are, in some cases, so similar, that it is almost impossible to name them correctly, unless they are found associated with the corresponding males.

P. FLOCCOSA, Macq.

The males of this common species may at ance be recognised by the tuft of hairs on the under-side of the base of the hind femora, and by the inner sides of the hind tibiæ being ciliated along the middle part of their inner surfaces with a series of short bristles of unequal lengths. There is but little doubt that this species is the same as the *M. floralis*, of Fallén, Meigen, Zetterstedt, Schiner, and others; for the general descriptions of both species agree together, though none of the last-named authors mention the tufted femora. The face is rather prominent; the eyes (of male) sub-contiguous; the arista pubescent; the thorax marked with three rather broad and widely separated stripes; the abdomen narrow and rather tapering, with a wide, black, dorsal, longitudinal stripe, which becomes narrower towards its extremity, and is more or less dilated opposite the upper margin of each segment, which is marked with a narrow, transverse, black line. The female has the eyes separated by a white, intra-ocular space, occupying about a third of the width of the head, containing a wide central stripe, usually red at its front part, and black behind; but sometimes entirely black. The thorax and abdomen are both lighter in colour than in the male, and are indistinctly striped; the latter is oblongo-ovoid in shape, with the apex pointed.

The larvæ feed upon the stems of cauliflowers and other varieties of the cabbage tribe. I have received specimens of the fly from Mr. Inchbald, bred from the first, and I reared several myself last summer from cabbage plants sent to me by Mr. Dunn, of Dalkeith, in consequence of their being infested with the "grubs of the cabbage-fly."

The larvæ of *A. floralis* are said, by Zetterstedt and Schiner, to feed upon radishes (*Raphanus sativus*), and Winnertz has bred this fly from the roots of *Brassica napobrassica.*

P. TRANSVERSALIS, Zett.

This species has the abdomen oblong, flattened, rather short, covered with soft hairs, and marked along the dorsum with a widish, longitudinal, black band of even width, interrupted opposite the edges of the segments, which are bordered by a whitish line. The thorax is very dark grey, marked with three indistinct, longitudinal, black bands, and has light grey sides. Zetterstedt says that the alulets are "*sordide albidæ*," but I have found both these and the halteres to be usually of an orange colour.

This is rather a local species. I have found it abundantly in a plantation near Bradford, and have received specimens from Mr. Inchbald, which he had bred from the leaves of *Rumex acetosa*, which are mined, or, rather, blotched, by the larvæ.

P. PUDICA, Rond.

This is a pretty, bright-looking fly, about the same size as the last (6 mm. long), but having the abdomen rather more elongated and pointed. The thorax is of a glistening whitish-grey colour, lighter on the front margin and on the shoulders; it is marked by a central black stripe, which only extends along the anterior half, and by two very wide lateral bands, which reach the bases of the wings. The abdomen is of a slight pinkish-grey colour (sometimes glaucous), with a slender, continuous, tapering, longitudinal, black stripe.

The sub-anal male appendages are small. The hind tibiæ are armed with a few bristles towards the upper part of their inner sides. I do not know the female.

Not uncommon.

P. DISSECTA, Meig.

This rare species is characterized by having yellowish-brown wings, sub-contiguous eyes (in the male), a nearly bare arista, a dull, dark grey thorax, with cinereous shoulders, and three, rather indistinct, black stripes, an oblong, flattened, rather narrow, abdomen, of a light grey colour, clothed with numerous soft hairs, and marked with an interrupted dorsal black stripe, formed by four triangular spots, the bases of which are dilated into transverse bands opposite the upper edge of each segment. It has straight, perpendicular, external, transverse veins to the wings, and the male hind tibiæ are armed with a few short bristles of uneven lengths in the middle of their inner sides.

I have not seen a female.

I captured one male at Thorparch, near York, in August, 1878, another at Silverdale, in Lancashire, in May, 1881, and a third near Bicester, Oxon, in June, 1882.

P. INCOGNITA, Rond.

This species, of which I have only seen one British male example, captured by the late F. Walker, closely resembles *P. dissecta* by its brown wings and other general characters, but differs by having a more pubescent arista, narrower cheeks, a more nigrescent thorax, and a narrower abdomen, which is marked with much larger triangular spots, which cover the greater part of the dorsum.

I possess a typical continental male specimen which was named by the late Professor Rondani. I do not know the female.

P. LACTUCÆ, Bouché.

This species is of a deep rich brownish-black colour with brown wings. The eyes of the male are contiguous, with the frontal triangle red; the arista is pubescent: the cheeks rufous; the thorax with a cinereous tinge on the shoulders and sides; the abdomen is oblong and flattened, of an uniform brown colour, when viewed from before backwards; but looking of a grey colour with brown reflections, and having an interrupted dorsal stripe, when seen from behind.

This pretty, well-marked species is said to feed, in the larval state, on the lettuce. It appears to be of rather local occurrence. The only place in which I have found it has been a kitchen garden near Buckingham, where I captured several males on several occasions. I have not seen a female.

P. OBSCURA, Macq.

The thorax of this species is black, with the front margin and shoulders glistening greyish-white. The anterior edge is intersected by three, and sometimes four (when the middle one is bifid), abbreviated black stripes, which form two or three irregular, bright, white, spots, giving a peculiar and characteristic appearance to the fly. The abdomen is oblong, rather narrow, flat, and glabrous. It is grey, with a wide, interrupted, black, dorsal stripe, and has three straight, transverse, brown bands, which cover the upper halves of the second, third, and fourth segments. The length is about 4 mm. (2 lin.).

Very rare; I have seen but one male specimen, which I captured near Bradford, in June, 1879.

P. MUSCARIA, Meig.

This is characterized by being narrow, elongated, black, and hairy. The face and epistome are both prominent; the antennæ are very short, the second joint being almost as long as the third, which is short and wide; the palpi are long, hairy, and dilated at their extremities; the thorax and abdomen are indistinctly striped; the latter is very narrow, and thickly clothed with long hairs; the hind femora are very hairy, but the hind tibiæ are bare on their inner sides. These remarks apply to the male, I do not know the female.

Very rare.

P. HISTRIO, Zett.

This, and the two following species, are peculiar by having the hind tibiæ of the males ciliated along the whole length of their inner sides with short erect hairs or bristles. The present fly, which is considerably larger than either of the two following (it being from 7 to 8 mm. in length) has the arista decidedly pubescent; the thorax whitish-grey, marked with a black central stripe (bifid in front), and with two wide, irregular lateral bands. The scutellum has the edges, and sometimes the centre, marked with brown. The abdomen is oblongo-conical, with the apical segment small. It is marked with a narrow, black, longitudinal stripe, as well as with black transverse lines. The wings have the external transverse veins oblique and sinuous. The hind femora are nearly bare of hairs on their under surfaces; and the hind tibiæ have the bristles arranged in a double row along both their inner and front sides; the bristles being of slightly irregular lengths.

This rare species, of which I only know the male, approaches in form, and by its pubescent arista, to those Anthomyds placed in the genus *Hylemyia*.

P. CILICRURA, Rond.

This little species, 4 to 5 mm. (about 2 lines) in length, is of a dark brownish-grey colour, marked on the thorax with three rather indistinct, wide, brown, longitudinal lines. The abdomen is flat and tapering, having a central, longitudinal, black, dorsal stripe, as well as transverse dark lines on the borders of the segments; the latter being only visible in certain lights. The anal segment is small and grey, and the sub-anal appendages of moderate size. The face and epistome are often rufescent, and are both slightly prominent; the eyes are sub-coherent in the male, and widely separated in the female; the latter having the intra-ocular space red at the fore part; the row of bristles on the inside of the hind tibiæ of the male consists of short rigid hairs, placed very near together, and of almost equal lengths. The female has the thorax of a paler brown colour, and is indistinctly striped.

This little fly is generally distributed, and feeds, in the larva state, upon onions. I bred a number of specimens of both sexes last summer, from onion plants, in different stages of growth, which had been kindly sent to me by Miss Ormerod, as well as by Mr. Dunn, of Dalkeith, in consequence of their being infested by the maggots or larvæ of *Diptera*, which were injurious to the onion crops.

I have placed the *A. ruficeps*, of Zetterstedt, as a synonym of *P. cilicrura*, though Rondani thinks that it agrees more closely with *A. angustifrons*, of Meigen; the latter species, however, has a decidedly prominent face, and Zetterstedt says of *A. fusciceps*, "frons parum prominula." The hind tibiæ, again, in *A. angustifrons* (a typical continental specimen of which, named by Rondani, I have had an opportunity of examining), are furnished with much longer and softer hairs than those of *P. cilicrura*; and Zetterstedt says of *A. fusciceps*, "tibiæ posticæ intus pube brevi erecta ciliatæ." I have not seen a British specimen of *A. angustifrons*. I formerly confused it with *P. cilicrura*.

P. TRICHODACTYLA, Rond.

This species very closely resembles *P. cilicrura*, but is usually rather smaller, of a lighter grey colour, and has the thorax less distinctly striped, being often immaculate. The abdominal dorsal stripe is generally interrupted, the separate portions having a triangular shape. The hind tibiæ of the males are armed exactly like those of *P. cilicrura*, but the middle legs present a very characteristic difference, the metatarsal joints being furnished on their outer sides with four or five long curved hairs or bristles. I only know the male.

This little fly is not uncommon, but less frequently seen than the preceding one.

P. FLORILEGA, Zett.

This species closely resembles *P. trichodactyla* in form, colour and design, but has the middle metatarsal joints of the males destitute of long hairs, and the inner surfaces of the hind tibiæ unarmed, with the exception of having two or three short bristles at their upper part. It is about 3 mm. in length, has both the face and epistome slightly prominent, the eyes of the male contiguous, the arista bare, the thorax yellowish-grey, marked with three indistinct brown stripes; the abdomen flat, narrow and tapering, with very small anal and sub-anal appendages; cinereous in colour, and marked with a sub-continuous dorsal stripe, which is quite straight, and of uniform width throughout. I do not know the female.

Not uncommon.

P. IGNOTA, Rond.

This is a well-marked little species, very common in gardens and fields. It is usually of a shining black colour; the males have large contiguous eyes which nearly cover the whole cheeks; the thorax is mostly immaculate, but in the less deeply coloured specimens three wide black bands may be observed on a brown ground; the abdomen is flat and tapers towards the extremity, when viewed from behind it is grey, having often a glaucous tinge, and is marked with a black longitudinal sub-continuous dorsal band, and with straight transverse lines; the wings are usually somewhat fuscous, having the third and fourth longitudinal veins rather widely separated, and slightly divergent from each other; the external transverse veins are straight and upright; the hind tibiæ of the males are bare on their inner sides.

The female is grey, with the thorax and abdomen indistinctly striped; the eyes widely separated, and the intra-ocular space black, with broad whitish margins.

P. CEPETORUM, *sp. n.*

Mas, griseus, thorace sublineato; abdomen lineare, depressum, cinereum, albonitente, linea dorsali nigra, interrupta, signatum; alæ claræ; tibiæ posticæ intus parce setosæ.

Femina, oculis remotis, abdomine immaculato, apice acuto.

Long. ♂ *et* ♀, 6 *mm.*

This species very closely resembles *Hylemyia antiqua*, Meig., and has doubtless been confounded with it. The chief points of difference between the two species are, that the arista is only pubescent in *P. cepetorum*, but sub-plumose in *H. antiqua*; the abdomen is marked down the dorsum with an interrupted stripe in *P. cepetorum*, while there is a fine continuous line in *H. antiqua* ("ununterbrochener schwarzer feiner Ruckenlinie");* lastly, the wings are mostly clear in *P. cepetorum*, but brown in *H. antiqua*.

Head: face slightly prominent; epistome flat; eyes of male contiguous; antennæ of moderate length, with the arista thickened and pubescent at its base, but nearly bare in the middle and at the extremity.

Thorax, with the scutellum of a light yellowish-grey colour; the former marked with four indistinct pale brown stripes, and with four rows of black bristles.

Abdomen oblong and rather narrow, cinereous, clothed with black hairs, and showing silvery-white reflections when viewed from behind; it is marked down the dorsum with a row of elongated, narrow, triangular black spots, which form a subcontinuous stripe; the anal segment is grey, small and rather pointed; the sub-anal male appendages are large and hairy.

Wings hyaline, with the third and fourth longitudinal veins nearly parallel to each other, and the external transverse ones straight, and a little oblique; *Calyptra* and *Halteres* both pale yellow; *Legs* sometimes piceous; hind femora almost bare of hairs or bristles at the base of their under-surfaces; hind tibiæ of the males furnished with a few short bristles along the middle and upper part of their inner sides. The female is very similar in colour to the male; the eyes are widely separated, the intervening space being red at its front part; the abdomen is dull grey, mostly immaculate, conical and pointed at the apex; the calyptra are white, and the halteres yellow.

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* Meigen.

This is "*par excellence*" an onion fly, as all the specimens which I have seen have been bred from the bulbs of that vegetable. I suspect it is the same as that named *A. ceparum* by Bouché, Meigen, and others, which has been mixed up by Schiner with *H. antiqua.**

I received specimens of this species last summer from Mr. Inchbald, which he had bred from onions, and I also reared several myself from bulbs of the same onions (sent by Miss Ormerod) which produced the specimens of *P. cilicrura*; the larvæ of both species feeding together, and passing through their transformations at the same time. It is very interesting to add, that a short time since I received both males and females of this fly from Professor Lintner of Albany, U. S., which he had bred from onions in America, and which corresponded in all respects with my English specimens, with the exception of having the legs more piceous or testaceous in colour.

P. NEGLECTA, *sp. n.*

Mas, fuscus, pilosus; thorace lineis quinque striato; abdomine angusto, maculis tribus triangularibus, dorso signato; alis venis tertiis quartisque longitudinalibus versus apicibus paulo convergentibus; tibiis posticis intus nudis. Long. 3 *mm.*

Head: eyes large, covering the cheeks, and closely contiguous; face and epistome only slightly prominent; antennæ rather elongated, the third joint being three times the length of the second; arista thickened along its basal third, where it is almost bare, but having the apical portion a little pubescent.

Thorax, with scutellum, grey, sometimes having a glaucous tinge; it is marked down the dorsum with five stripes, of which the middle and two lateral ones are the widest, the intermediate lines being narrow and sometimes indistinct, when only three broad stripes are visible.

Abdomen narrow and pointed towards the apex, covered with numerous soft black hairs, and consisting of four distinct segments, of which the first is very short, the second longer than any of the others, and the third and fourth about equal in length; it is of a dull grey colour, and marked down the dorsum with three large triangular black spots, the bases of which are transversely dilated opposite the upper margins of the second, third, and fourth segments; the apical joint is very small and pointed, and furnished on its under-surface with two small lamellæ, on the outer side of each of which a small black hook or tooth may be observed, projecting backwards.

Calyptra moderately developed, of a dull yellowish-white colour; *Halteres* orange-yellow.

Wings slightly nigrescent, costal spine wanting; costal vein ciliated at the base; external transverse vein straight and upright; third and fourth longitudinal veins diverging from the site of the internal transverse vein, for three-fourths of the distance to the apex of the wing, and then becoming slightly convergent towards each other; the third longitudinal vein reaching the border exactly at the apex. *Legs,* with the under-surfaces of all the femora, ciliated with a double row of long fine bristles; inner sides of hind tibiæ bare. The female is unknown to me.

This little well-marked species is generally distributed, but not common.

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* In a former part of this list I placed *A. ceparum*, Meig., under *Hylemyia tibiaria*, Rond., but I now believe that I was mistaken in thinking that they were synonymous.

P. EXIGUA, *sp. n.*

Mas, nigrescens, oculis coherentibus; thorace sublineato; abdomine hirsuto, lineari, depresso, cauda incrassata, lineaque interrupta, et incisuris transversis signato; nervis transversis subapproximatis; tibiis posticis intus ciliatis.

Long. 2 *mm.*

This little species bears a very considerable resemblance to *P. ignota*, the abdomen being marked much in the same way; it differs from it, however, by being smaller, in having the abdomen narrower and more thickened at the extremity, the calyptra smaller, the third and fourth longitudinal veins nearer together and quite parallel, the transverse veins nearer together, and the hind tibiæ ciliated.

Head: eyes contiguous; face and epistome slightly prominent; antennæ rather short, the third joint being scarcely twice the length of the second; arista bare, and with an oval, shining black, thickened protuberance at its base.

Thorax dull schistaceous-grey, with the sides paler in colour, marked with three or five rather indistinct longitudinal black stripes.

Abdomen hairy, oblong, narrow, attenuated at the base and thickened behind; it is marked on the dorsum by a narrow, interrupted, black, longitudinal band, with transverse lines, and a number of small black spots round the roots of the hairs; the apical segment is large, double, projecting, and of an ash-grey colour; the sub-anal processes are large, and consist of two pairs of lamellæ, one pair projecting from the apex forwards, and the other pair (which are placed towards the middle of the belly) extending backwards.

Wings slightly fuscous, with the first and second longitudinal veins, as well as the costa, black and rather thickened; the third and fourth longitudinal veins are placed rather near together, and are quite parallel to each other; the transverse veins are also somewhat close, and the external one is straight and upright; there is no costal spine.

Calyptra very small, and of a brownish-white colour. *Halteres* yellowish-brown and sometimes nigrescent. *Legs*, with the hind femora, furnished beneath with short soft hairs along the basal half, and with longer ones towards the extremity; hind tibiæ ciliated with a few bristles of irregular lengths on the middle part of their inner surfaces. *Female* unknown.

I captured several specimens of this fly at Silverdale, Lancashire, in May, 1881.

(*To be continued*).

DILAR JAPONICUS, *n. sp.*

BY ROBERT McLACHLAN, F.R.S., &c.

♂. *Head*, above, shining yellowish-testaceous, much elevated, with a median longitudinal impressed line; the three piliferous warts very large (the lateral ones the largest), the hairs yellow: *face* shining brownish: *antennæ* pale yellow, about 30-jointed, each joint, from the 3rd to about the 21st, with a strong clavate branch, mostly very long, but shorter towards the base and apex of the antennæ; 3rd joint with an inner tooth immediately below the branch; the 6 or 7 apical joints short and nearly moniliform.

Pronotum yellowish, with two contiguous median tubercles. *Mesonotum* having the lobes broadly fuscescent. *Metanotum* yellowish.

Legs yellowish, with concolorous hairs; knees blackish; a brownish mark at apex of tibiæ, and the under-side of the tarsi (especially the posterior) is also brownish.

Wings yellowish-grey, very broad, nearly equal in form, the apices almost semicircular: the anterior pair closely freckled with pale grey spots arranged in many transverse series; towards the extreme base the spots are darker, and there are the usual two blackish horny points, one towards the base below the first sector, the other towards the disc below the 1st branch of the second sector; neuration yellowish with pale hairs; second sector with four principal branches; a well-defined series of gradate nervules extending obliquely from below the 4th branch of the second sector (in addition to the nervules in the basal half of the wing): posterior-wings slightly paler, without grey spots, but with the usual two dark horny points.

Abdomen fuscescent, clothed with very long yellow hairs; apex yellow, the incrassate lateral valves very thick, meeting above and below (in the dry insect), leaving a narrow long-oval apical cavity between them; they are clothed with extremely long yellow hairs.

Expanse of wings, 24 mm.; length of an anterior-wing, 11½ mm., breadth of same, 6 mm.

Habitat: Japan (Fukushima in the main Island, 28th July, 1881), 1 ♂.

For this very interesting addition to our knowledge of the geographical distribution of *Dilar*, I am indebted to Mr. George Lewis.

In colour *D. japonicus* much resembles *D. Hornei*, McLach., from N. W. India (*cf.* Ent. Mo. Mag., v, p. 239), but is larger, and the wings are considerably broader and more semicircular at the apex, and have the markings paler; there appears, moreover, to be an outer series of gradate veinlets in the anterior-wings that is not present in the types of *Hornei*. Furthermore, the condition of the abdominal apical cavity is strikingly different, and there is no trace of the superior lamina or lobe seen in *Hornei* (*cf.* figure of apex of abdomen of *Hornei*, Ent. Mo. Mag., v, p. 240).

D. Hornei, japonicus, and no doubt *Nietneri* (unknown to me, *cf.* Hag., Stett. ent. Zeit., 1866, p. 296), differ from the South European forms in the joints of the antennæ being shorter and more dilated, but with much longer and stronger branches; otherwise, they appear to be quite congeneric, and there is a general resemblance rendering specific differentiation difficult.

D. Prestoni from S. America, and *D. americanus* from N. America, differ in their small size and in neuration, and perhaps will be eventually separated generically (*cf.* McLach., Ent. Mo. Mag., xviii, p. 55).

Lewisham: ***3rd February*, 1883.**

DIPTERA IN ARRAN.

BY G. H. VERRALL.

A fortnight in June spent in the Island of Arran gave me an opportunity of collecting a number of *Diptera*, a list of which may be of interest for geographical distribution. The climate of the Island is wonderfully mild, owing to its receiving the full brunt of the Gulf Stream, hence not so many northern forms occurred even on the mountains, as the high latitude induced me to expect. The *Flora* especially seemed more like that of the south-west of England, as fuchsias nine or ten feet high with stems quite four inches thick, and rhododendrons by many thousands, grew in the woods about Brodick Castle; delicate shrubs flourished in gardens when protected from deer, and laburnums, *Iris pseudacorus*, and a potato-field in the south of the Island close to the edge of the sea show the comparative harmlessness of the storms. The day I ascended Goatfell, the highest point on the Island (2866 feet), there was scarcely a breath of wind even on the summit, and the sea between Arran and Cantire was like glass, while the steamer coming from Glasgow left behind it the ripple of the paddlewheels visible on the calm water for four or five miles, *Diptera* buzzed on the rocks about the summit, and *Coleoptera* ran about between the stones.

My chief attention was given to the *Anthomyiidæ*, and I succeeded in getting good series of several species which I had met with before only at Rannoch or Braemar, some of which though common in Scotland, have never yet been recorded as British. Those species which I have clearly identified I will leave at present in the generic divisions adopted by Dr. Meade in his paper now appearing in this Magazine.

Altogether I took between 1200 and 1300 specimens of *Diptera*, belonging to rather more than 200 species; I shall not attempt to describe any new species here, as I consider any I may have found should only be treated more monographically, and any I may be in doubt about I have preferred not to enumerate at present.

I made Brodick (where there is a first class hotel) my head quarters, but I made excursions to Lagg, Loch Ranza, Glen Sannox, Lamlash, Corrie, Blackwater Foot, &c., hence I explored most of the Island, and the species I have identified are as follows:—

Nemotelus notatus
Microchrysa polita
  flavicornis
Beris vallata
  chalybeata
Hæmatopota pluvialis
  crassicornis (1)
Leptis scolopacea
  notata
Chrysopila aurata, F.
  holosericea, Wlk.
Isopogon brevirostris
Hybos sp.
Cyrtoma 2 sp.

- Rhamphomyia nigripes (2)
  - albosegmentata (2)
  - geniculata (2)
  - tarsata (2)
  - umbripennis (2)
  - flava (2)
- Empis tessellata
  - livida
  - trigramma
  - vernalis
  - sp. ? (3)
- Hilara interstincta
  - maura
  - squalens
  - pruinosa
- Hemerodromia melanocephala
- Gloma fuscipennis (4)
- Tachypeza nubila, Mg.
  - *nervosa*, Mg.
- Tachista annulimana, Mg.
  - *cimicoides*, Wlk.
- Tachydromia = Platypalpus, 3 or 4 sp.
- Hygroceleuthus diadema
- Dolichopus atripes
  - vitripennis
  - atratus
  - lepidus
  - nubilus
  - discifer
  - pennatus
  - popularis
  - urbanus
  - simplex
  - æneus
- Gymnopternus cupreus
  - ærosus
- Tachytrechus notatus
- Argyra diaphana
  - argentina
  - leucocephala
- Syntormon sulcipes, Mg.
  - *œdicnemus*, Lw.
- Synarthrus pallipes
- Rhaphium longicorne
- Xiphandrium fissum
  - monotrichum
  - appendiculatum
- Porphyrops prærosus, Lw. (5)
  - *tenuis*, Ver.
- Machærium maritimum
- Sympycnus annulipes
- Campsicnemus curvipes
  - armatus
- Medeterus apicalis ? (6)
- Psilopus platypterus
- Chrysogaster metallina
  - Macquarti
- Chilosia variabilis
  - flavimana
  - albitarsis
  - chloris
  - antiqua
  - sponsa
- Leucozona lucorum
- Melanostoma mellina
  - scalaris
- Platychirus manicatus
  - peltatus
  - albimanus
  - clypeatus
- Syrphus 4-lunulatus, Schm. (7)
  - *nigricornis*, Ver.
  - *obscurus*, Zett.
  - grossulariæ
  - vitripennis
  - nigritarsis ? (8)
  - annulatus
  - cinctus (9)
  - compositarum
  - punctulatus
  - barbifrons
- Sphærophoria menthastri
- Ascia podagrica
  - floralis
- Sericomyia lappona
- Rhingia rostrata
- Eristalis horticola
  - nemorum
  - arbustorum
  - pertinax
- Helophilus pendulus
- Xylota segnis
- Syritta pipiens
- Siphona sp.
- Sarcophaga carnaria
  - Atropos
- Cynomyia mortuorum
- Onesia sepulchralis
- Stomoxys stimulans
- Lucilia Cæsar
  - cornicina
- Calliphora erythrocephala
  - vomitoria
- Mesembrina meridiana
- Graphomyia maculata
- Morellia simplex
  - hortorum
- Cyrtoneura stabulans
- Myiospila meditabunda
- Polietes lardaria
  - albolineata
- Hyetodesia lucorum
  - marmorata
  - incana
  - variabilis
  - longipes
  - umbratica
  - semicinerea
  - errans
  - signata
  - lasiophthalma
  - populi
- Mydæa urbana
  - pagana
  - impuncta
- Spilogaster nigrinervis
  - maculosa
  - consimilis
  - communis
- Limnophora compuncta
  - sororcula
  - contractifrons
  - sp. 3 or 4
- Hydrophoria conica
- Hydrotæa ciliata
  - occulta
  - irritans
  - dentipes
  - palæstrica
  - Rondanii
  - meteorica
  - fasciculata
- Trichophthicus innocua (10)
  - hirsutula (10)
  - cunctans
- Homalomyia manicata
  - armata
  - lepida
  - serena
  - carbonaria

Azelia Macquarti
Zetterstedti
cilipes
gibbera
Hylemyia variata
strigosa
nigrimana
Lasiops Rœderi
ctenocnema
Anthomyia pluvialis
radicum
Chortophila floccosa, Rond.
villipes, Zett.
trichodactyla
Scatophaga inquinata
squalida (11)
litorea
Cœlopa sp.
Psila fimetaria
nigra
Palloptera umbellatarum
Mycetophila bimaculata
Macrocera lutea
Bibio lacteipennis
Dilophus vulgaris
Scatopse inermis
notata
Rhyphus fenestralis
punctatus
Ptychoptera lacustris
Limnobia nubeculosa
Rhypholophus sp.
Tipula sinuata, F.
gigantea, Schrk.
rufina

NOTES.

(1) *Hæmatopota crassicornis,* Wahlb.—I have no doubt we have two common and widely diffused species of *Hæmatopota* in Britain. The distinction is much easier to the eye than to the pen, as the readiest character is the tint of the wing which is marbled-grey in *H. crassicornis* and muddy-yellowish in *H. pluvialis*. Very little can be added to Wahlberg's original distinctions, in which he says, "Differt statura breviori, colore intensius nigricante, nec subfusco, pictura thoracis, abdominisque albida, nec cinerea, maculis alarum albis in lineas subcirculares magis confluentibus—Lineæ thoracis laterales abbreviatæ et interruptæ, sat distinctæ, nec subcontinuæ, obsoletiores. Maculæ abdominis parvæ, rotundæ, distinctæ, nec majores, obsoletæ." I have seen *H. pluvialis* from Lewes and Lyndhurst to Arran, and *H. crassicornis* from Sussex to Sutherland. In Curtis's British Entomology, 525, is figured *H. italica*, from Mersey Isle, Essex, which seems distinct from the other two by its larger size and ochreous femora; Mr. H. Vaughan gave me just such a specimen from near Southend; what species it really represents I cannot say at present.

(2) *Rhamphomyia.*—The whole genus *Rhamphomyia* remains in a most unsatisfactory state, very few species being as yet well identified or described. Of those I record, *R. nigripes* is common and well known; *R. flava*, Fln., is equally well known though less common, the males were hovering about six feet from the ground in considerable numbers in a path through the plantations near Brodick Castle; the other four species are not in our most recent British lists, though *R. umbripennis* was enumerated in Stephens' Catalogue. The species I have called *R. albosegmentata*, Zett., comes very near *R. nigripes*, F., but has the discal cell alike in both sexes, it seems very common in Scotland, and I have taken it at Lyndhurst, and at Abbott's Wood in Sussex; *R. geniculata*, Mg., is a greyish species, with black legs and pale knees, the female having the legs partly feathered, I feel no doubt it is the *R. geniculata* of Meigen and Zetterstedt; *R. tarsata*, Mg., is a shining black species, with blackish legs, the male having hyaline wings with a conspicuous black stigma, incrassated basal joint of hind tarsi, and large very conspicuous genitalia: the female has the posterior femora and all the tibiæ somewhat feathered; I have taken it at Leigh and at Worcester; I have no doubt it is Zetterstedt's *R. tarsata*, and probably Walker's *R. longipes*, as it seems to agree with a bad specimen so named in the late Mr. W. W. Saunders' collection; Walker says "no stigma," but I expect he named Mr. Saunders' specimen, and I certainly cannot put much value

upon his description; *R. umbripennis*, Mg., is a common small weak species, with dull black thorax (♂), brownish-yellow legs and smoky wings, the female having simple yellower legs.

(3) *Empis* sp. ?.—I caught what I cannot doubt is a pair of a small black *Empis* at Lagg, but the male is most remarkable as one wing has not the fork of the cubital vein which is the sole distinction between the genera *Empis* and *Rhamphomyia.*

(4) *Gloma fuscipennis*, Mg.—Both genus and species are omitted from Walker, though mentioned in Stephens' catalogue, because they were represented in his collection by *Sciodromia immaculata* (*v.* Walker, Ins. Brit. Dipt., iii, addenda xi). The genus is distinguished from *Hilara* by the long terminal bristle to the antennæ, and from *Brachystoma* (to which I think it most allied) by the shorter anal cell. *G. fuscipennis*, Mg., is the only European species, and seems widely distributed, though rare. The single specimen I caught was in bad condition.

(5) In February, 1876, in my "Notes on some British *Dolichopodidæ*," I described three supposed new species. When sending some specimens to Herr Kowarz last year I enclosed my types for his examination, and I am sorry to say all three species sink as synonyms. The genus *Porphyrops* is still an exceedingly difficult one, which may account for my failure there, while the *Diaphorus* had been described too incompletely. *Porphyrops simplex* = *P. micans*, Mg.; *P. tenuis* = *P. prærosus*, Lw.; *Diaphorus dorsalis* = *D. melancholicus*, Lw.

(6) MEDETERUS.—In my "List of British *Dolichopodidæ*" (Ent. Mo. Mag., ix, 71) I gave only five British species of *Medeterus*, to which I added one in 1876. By the aid of Kowarz's paper on the genus in the Verhandlungen der zool.-bot. Gesellschaft in Wien, xxvii (1878), I can now enumerate the following British species:—

- *micaceus*, Lw.
    - *apicalis*, *var. b.*, Zett.
- *muralis*, Mg.
    - *melanopleurus*, Lw.
- *tristis*, Zett.
- *apicalis*, Zett. (?)
- *pallipes*, Zett.
    - *muralis*, Lw.
- *diadema*, L.
    - *rostrata*, F.
    - *carnivora*, Fisch.
    - *æneivittatus*, Mcq.
- *flavipes*, Mg.
- *jaculus*, Mg.
    - *nigricans*, Mg.
- *truncorum*, Mg.

To these I expect seven or eight more species may yet be added, and I think I possess at least four not enumerated above, but which I am not yet satisfied about. *M. micaceus* will fall under Mik's genus *Oligochætus.*

(7) This synonym is given on the authority of a letter from Loew, but I do not know where Schummel described the species, nor is it given in Schiner's Catalogue of European *Diptera.*

(8) *Syrphus nigritarsis*, Zett. ?.—I captured one female of a *Syrphus* very near *S. latifasciatus*, Mcq. (= *abbreviatus*, Zett.), but the scutellum is black haired. With considerable doubt I refer this to the little known *S. nigritarsis* of Zetterstedt; I have another female very similar, which was given me by the Rev. H. S. Gorham, who caught it at Box Hill. The species must remain doubtful until more specimens can be obtained.

(9) *Syrphus cinctus.*—This species was not very uncommon, and is readily distinguished from the commoner *S. cinctellus*, Zett.

(10) *Trichophthicus.*—Taking this genus in the sense adopted by Dr. Meade, two species were common in Arran and I expect over most of Scotland, as I caught both at Rannoch and *T. hirsutula* at Braemar and also at Windermere. According to Zetterstedt, their first describer, both are common in Scandinavia. The two species are remarkably alike, and I failed to distinguish the females though specially looking out, and Zetterstedt who took both species *in cop.*, fared scarcely better. The males of both are blackish, the abdomen (viewed from behind) being greyish with a black dorsal line; both have somewhat smoky wings and halteres, and both have the hind tibiæ clothed in front and beneath with longish erect hairs, but in *T. innocua* the hind tibiæ are nearly straight, and their apices with scarcely any noticeable spur beneath, while in *T. hirsutula* the hind tibiæ are curved and have at their apices behind a long conspicuous blunt spur. In *T. hirsutula* the abdomen is lighter grey, and the incisures more darkened.

(11) *Scatophaga squalida*, Mg.—This species was common on the extreme summit of Goatfell (2866 ft.).

The remarkable absences from this list are the whole genus *Clinocera* which I specially looked for, and above all *Musca domestica* which I could not find; I have no doubt it occurs later in the year, as when the house I am now living in was built I could not find *M. domestica* in it until August.

Sussex Lodge, Newmarket:
December, 1882.

FURTHER TROPICAL NOTES.

BY GEO. C. CHAMPION.

Mr. W. D. Pryer's additional "Tropical Notes" (Ent. Mo. Mag., vol. xix, p. 59) have just reached me; and, as they are written chiefly in answer to my observations on the same subject (Ent. Mo. Mag., vol. xviii, p. 214), I will now supplement my previous notes with a few more particulars of my own experiences in the New World.

I think we are both equally agreed as to the exaggerated accounts usually given by travellers of the fauna of the tropical forest (of Central America I have read of enormous blue butterflies nine inches in expanse; the species that do occur become greatly magnified in size), but in speaking of this part of the world, it is impossible to say *that butterflies in particular are never found beneath the forest canopy* (the italics are mine), and it is to these accounts of Mr. Pryer's experiences in Borneo I demurred, as not being applicable to Central America.

The primeval forests of Central America are comparatively open, and cannot be nearly so dense as in Borneo; again, even in the densest part, trees are constantly toppling over by the roots in the rainy season, or falling from decay, and, if anywhere near a village, the natives are frequently felling, if not for the timber, for honey; so that it is not very difficult, as a rule, to find places where the sun will penetrate. In these openings many butterflies will be found, as species of *Nymphalidæ*, *Heliconiidæ*, *Morphidæ*, &c. In the *densest* parts of the forest, I have found not a few species of *Satyridæ*, three species of *Hetæræ* (including a beautiful transparent-winged species), *Taygetis*, &c. These insects especially occurring about the long, upright, stilt-like spiny roots of various species of palms; and, wherever the sun can penetrate a little, various *Euptychiæ* and other small species of the same family, also *Leptalis*, *Heliconius*, *Mechanitis*, small *Lycænidæ*, &c. The immense species of *Caligo* and *Brassolis*, the *Ithomiæ*, and some other *Heliconiidæ*, *Hades noctula*, and many *Satyridæ*, seem to avoid the sun altogether, occurring in places where it seldom, if ever, penetrates, and a few, especially the first-named, appear to be crepuscular, flying about sunset. The splendid blue *Morphos*, and the white *M. Polyphemus* (also in Guatemala), are to be found chiefly in openings in the forest, where they seem to sail along the pathways, lazily flapping their wings, seldom settling and seldom coming within reach of the net.

In the rainy season (April to December), butterflies are generally scattered throughout the forest, but in the dry season (January to March), nearly all the *Pieridæ*, *Papilionidæ*, *Nymphalidæ*, and *Hesperiidæ*, and some *Erycinidæ*, congregate about the banks of the nearly dried up rivers and streams, and one may hunt for them almost in vain elsewhere at this period; the *Satyridæ*, and most of the *Heliconiidæ* and *Morphidæ*, however, keep to the shady forest. In February and March I have seen hundreds of butterflies of very many different genera, *Papilio*, *Callidryas*, *Terias*, *Junonia*, *Megalura* (many species), *Catagramma* (ditto), *Callicore*, *Adelpha*, *Synchloe*, *Colænis*, *Libythea*, *Agraulis*, *Phyciodes*, *Eubagis*, *Siderone*, *Paphia*, *Apatura*, many *Hesperiidæ*, &c., congregated about the river banks, both in the virgin forest and in the open second growth woods, or "rastrojos;" some of these settle for a few moments on the boulders, or in wet places, but always in the very hot sun, and are exceedingly difficult to secure; others (chiefly species of *Papilio*, *Callidryas*, *Terias*, *Megalura*, and *Phyciodes*) congregate, 50 or even 100 examples together, in one little spot not a foot in circumference, and the whole of them may sometimes be captured by one sweep of the net.

In one little spot near here, the margin of a partly dried up river in the forest, I have captured upwards of sixty species of butterflies (including at least thirty-five genera), and the greater part may be seen, if not caught, any very hot sunny morning during the latter part of February and beginning of March: it is true that many of the species are not represented by many individuals, still, a few are in plenty. Though one may collect nearly every day in the year, still this abundance of butterflies lasts a comparatively short period, not longer, perhaps, than in the temperate zone; as soon as the rains commence in April they soon disperse, yet the *Pieridæ* (*Callidryas*) may be seen flying in troops along the river banks nearly all the year, and *Megalura* and some *Hesperiidæ*, for several months, congregating in large numbers in one spot.

I have observed in the Polochic Valley in Guatemala, at the end of the dry season (April), a similar abundance of butterflies (though, perhaps, not quite so many species as here in Chiriqui), some fine *Papilios* (especially a beautiful green and black species) being very common amongst others, and all congregated in one little spot on the sandy banks of the Rio Polochic. In the forests on the mountain slopes (3000—5000 feet), even in the densest places, I have taken *Hetæræ*, *Taygetis*, *Oxeoschistes*, and *Ithomiæ*, and, wherever an open space occurred, various *Leptalis*, *Euterpe*, *Phyciodes*, *Pieridæ* (*P. tenuicornis*, common in Chiriqui), and *Satyridæ*, and more rarely a *Papilio*, *Clothilda*, or *Paphia*.

Some butterflies appear to avoid the forest altogether, as the *Danaidæ*, *Anartia*, *Agerona*, *Victorina*. The *Acrææ*, various *Papilio*, and *Thecla*, many *Hesperiidæ* (*Pyrrhopyge*, *Eudamus*, &c.), some few *Heliconiidæ*, &c., but odd examples will occasionally be seen with forest-loving species on the banks of the river in the virgin forest, in the dry season.

In Central America, an ordinary traveller will notice, I believe, ten times more butterflies in the dry season than at any other time of the year; not, perhaps, because more species are to be found at this period, but because they are concentrated at every damp spot, when the forests are utterly dried up, and many of the trees leafless.

One is far more disappointed with the Coleopterous fauna of the forests of Central America than with the *Lepidoptera*. The majority of the species, with some few striking exceptions, are very insignificant in appearance, and scarcely any finer than those of Europe, but this cannot be said of the butterflies.

For the past month or so, few butterflies have been visible in the forest, beyond the usual *Morphos*, *Caligos*, and *Hetæræ*, but now that the rains are nearly over, more species are to be met with daily, and next month, when the mud and water begin to dry up a little (the forest is little better than an immense swamp at this season), still more species will be found.

To conclude, I must say I believe that such numbers of butterflies (of species there can be no comparison) congregated as are noticed by Mr. Bates and other naturalists in South America, and to be seen frequently in Central America in the dry season, are very seldom, if ever, to be seen outside the tropics; in the State of Panamá alone, there are probably more species than in the whole of Europe. I regret, in the foregoing remarks, I am only able to particularize a few genera, and not having any books whatever by me, have no means of determining species here at this moment.

Bugabita, Chiriqui, Panamá:
November 23*rd*, 1882.

NOTES ON NEW BRITISH *COLEOPTERA* SINCE 1871; WITH NOTICES OF DOUBTFUL SPECIES, AND OF OTHERS THAT REQUIRE TO BE OMITTED FROM THE BRITISH LIST.

BY THE REV. W. W. FOWLER, M.A., F.L.S.

(*continued from p.* 201.)

ANISOTOMIDÆ.

Anisotoma macropus, Rye.

This species may be distinguished from all but *A. Triepkii*, by having its posterior femora suddenly and obliquely contracted towards the trochanter; it is smaller, longer, narrower, and less convex than *A. Triepkii*. Taken by Mr. Champion, near Claremont, Surrey (Ent. Mo. Mag., x, 133).

Anisotoma brunnea, Sturm.

This species is entirely ferruginous, shining, with a narrow club to its concolorous antennæ, of which the apical joint is not narrower than the preceding; its thorax is not sinuate on each side at the base, and the striæ on its elytra are fine, with small and closely packed punctures. Taken by Mr. Lawson near Scarborough (Ent. Mo. Mag., ix, 135).

Anisotoma curta, Fairm.

In the same section as *A. dubia*, from which it may be distinguished by its rather longer build, the much stronger punctuation of its thorax, the sides of which are more contracted behind, and by the apical joint of its antennæ being distinctly not as wide as the penultimate joint. Taken by the Rev. T. Laundy Brown near Norwich, and by Mr. Champion at Esher (Ent. Mo. Mag., xii, 150).

ANISOTOMA SCITA, Er.

This species apparently comes very near *A. dubia*, but its tibiæ are less dilated at the apex, its thorax is widest at or very near the base (instead of nearer the middle), and thence is narrowed to the front: it is also lighter in colour. Taken near York by Mr. Hutchinson, and recorded, with some reservation, by Mr. Rye (Ent. Mo. Mag., ix, 158); it seems to be a doubtful species.

ANISOTOMA CLAVICORNIS, Rye.

There is a single specimen of this species in Dr. Sharp's collection taken in flood rubbish near Dumfries. It is distinguished by its antennæ, which are very short, gradually widened towards the apex, with the 4th, 5th, and 6th joints unusually small, and the apical joint, though short, as wide as the two preceding, which are very transverse (Ent. Mo. Mag., xii, 150).

ANISOTOMA PALLENS, Sturm.

This species is readily distinguished from *A. furva* and *A. ciliaris*, the two others of its group, by its smaller size, the much finer and less close punctuation of its thorax, and by the finer punctuation of the striæ, and much less close punctuation of the interstices of the elytra, the outer margins of which are not set with short cilia. Three specimens taken by Mr. J. J. Walker at Deal (Ent. Mo. Mag., x, 135).

ANISOTOMA LUNICOLLIS, Rye.

Of the average size of *A. calcarata*; chiefly distinguished by its strongly rounded thorax, of which the usual anterior angles are entirely, and the posterior angles almost entirely, obliterated; it is more oblong than *A. calcarata*, and its antennæ have a smaller club. Taken by Mr. R. Lawson near Scarborough (Ent. Mo. Mag., viii, 203).

Hydnobius spinipes, Gyll.

This species, recorded as British by Mr. Rye in Ent. Mo. Mag., viii, 204, is afterwards given up by him, the specimen in question being only a highly developed male of *H. strigosus*.

SILPHIDÆ.

Colon Barnevillei, Kr.

This species, mentioned in Ent. Mo. Mag., xii, 177, is apparently only an undeveloped form of *C. Zebei*, Kr.

Adelops Wollastoni, Jans.

This species must be referred to the genus *Bathyscia*, Schiödte, and not to *Adelops*, Tellkampf.

PHALACRIDÆ.

PHALACRUS BRISOUTI, Rye.

This species is nearly allied to *P. coruscus*, but differs from this species in its average smaller size, rather lighter coloured fore-legs, tarsi, and antennæ; the club of the antennæ also serves to distinguish it, being rather broader and not so long, with the apical joint conspicuously broader and shorter, and not so acuminate. Taken at Lee by Mr. Rye, and at Gravesend by Mr. Champion (Ent. Mo. Mag., ix, 8).

Phalacrus Humberti, Tourn.

This insect, recognised as a good species in Ent. Mo. Mag., ix, 37, is abandoned in Ent. Mo. Mag., xii, 177, as being only a small variety of *P. coruscus*.

Olibrus affinis, Sturm.

It is probable that the insects standing in collections under this name ought to be referred to *O. particeps*, Muls., but the point does not seem quite to have been cleared up (Ent. Mo. Mag., ix, 38).

Olibrus bicolor, F.

This is apparently not a British insect, our insects standing under this name being all *O. liquidus*, Er.; the true *O. bicolor* is a larger, rather less elongate, and more convex insect.

Olibrus helveticus, Tourn.

A single specimen of this species is recorded in Ent. Mo. Mag., xii, 177; the species of the genus in many cases run so closely one into the other, that further confirmation of this insect seems to be required.

NITIDULIDÆ.

Carpophilus sexpustulatus, F.

This is a very doubtful, and probably introduced, species.

MELIGETHES MOROSUS, Er.

There is considerable confusion as to this species; it comes very near *M. memnonius*, Er. A specimen returned to me by one of the chief British authorities on the genus, as not agreeing with any he possessed, was afterwards named for me on the continent as *M. morosus*, Er.; *M. morosus* is rather shorter than *M. memnonius*; but, otherwise, there appears to be very little difference between them. Mr. Rye, in Ent. Mo. Mag., x, 138, says that M. Ch. Brisout de Barneville considers that *M. memnonius* is intermediate between *M. difficilis* and *M. morosus*, or, perhaps, a variety of one of them.

MELIGETHES OCHROPUS, Sturm.

Allied to *M. difficilis*, Heer, but readily separable from all its allies by its comparatively broad and short-oval form, and stronger convexity, and especially by the outer margin of its posterior tibiæ not being rounded, but dilated in almost a straight line until the lower third, where it is suddenly and obliquely contracted (Ent. Mo. Mag., ix, 156).

Meligethes Kunzei, Er.

This insect seems to be a variety of *M. difficilis*, rather than a separate species.

MELIGETHES INCANUS, Sturm.

This insect is of the size of ordinary *M. ovatus*: it is of exactly oval outline, dull, closely and finely punctured, and clothed with very evident, depressed, grey hairs. One specimen taken by Mr. G. R. Waterhouse in Darenth Wood, on *Echium vulgare* (Ent. Mo. Mag., viii, 268).

M. maurus, Sturm.

This species must be erased from our lists, all the supposed British exponents of it being identical with *M. ovatus*, Sturm. (Ent. Mo. Mag., viii, 267).

M. palmatus, Er.

This species, according to M. Brisout, is the male of *M. obscurus*, Er. Mr. Rye adopts this synonymy: some authorities consider *M. palmatus* to be identical with *M. distinctus*, Sturm, a species not recognised at all by M. Brisout.

MELIGETHES PICTUS, Rye.

This species is conspicuous in having each elytron ornamented on the disc with a more or less sharply defined red spot; its form, the serration of the tibiæ, and its long legs, also serve to distinguish it: according to M. Brisout, it is identical with *M. mutabilis*, Rosenhauer, which is considered a variety of *M. brevis*, Sturm. (Ent. Mo. Mag., viii, 74, 269).

TROGOSITIDÆ.

Trogosita mauritanica, L.

This species must be referred to *Tenebrioides*, Piller, and not to *Trogosita*, Olivier.

CUCUJIDÆ.

CATHARTUS ADVENA, *Waltl.*

This species has been omitted from the British list, as being only an importation; it has, however, been taken under circumstances that would seem to show that it has become thoroughly naturalized, and that it has a better claim to be admitted than many other species.

CRYPTOPHAGIDÆ.

Cryptophagus pilosus, *v.* PUNCTIPENNIS, Bris.

This variety, which has been considered a good species by some authorities, differs from the type in having more oval elytra, of which the pubescence is longer, and the punctuation coarser and not so close, especially at the base. Taken in the Cambridge fens, and on the Braid Hills, Edinburgh, in each case from a straw shed (Ent. Mo. Mag., viii, 158).

CRYPTOPHAGUS SUBFUMATUS, Kr.

This species resembles *C. validus*, Kr., being nearly as large, but narrower, especially in the thorax, of which the anterior callosities are more distinctly prominent. One specimen taken in the London district (Ent. Mo. Mag., xii, 178).

Cryptophagus grandis, Kr.

This species is apparently synonymous with *C. populi*, Payk, and, therefore, must be omitted.

CRYPTOPHAGUS PARALLELUS, Bris.

This species comes close to small examples of *C. dentatus*, Herbst., but cannot be confounded with any other member of the genus by reason of its narrow, elongate, and parallel form. Taken in Scotch fir by Dr. Sharp and Mr. Rye, at Rannoch (Ent. Mo. Mag., viii, 158).

Cryptophagus Waterhousei, Rye.

This species is only a large and peculiar form of *C. acutangulus*, Gyll., and must, therefore, be omitted.

ATOMARIA BADIA, Er.

Allied to *A. elongatula*, Er., but is rufo-ferruginous in colour, with a transverse impression at the base of the thorax, and broader, and somewhat more strongly punctured elytra (Ent. Mo. Mag., viii, 74).

ATOMARIA ATRA, Herbst.

Allied to *A. fuscata*, but is darker, with a longer, more convex, and more laterally rounded thorax, and stronger punctuation on the elytra, which are more acuminate behind in outline (Ent. Mo. Mag., viii, 135).

ATOMARIA DIVISA, Rye.

This rests as a species on a single specimen in Mr. Rye's collection with no locality. It is a very distinct species, nearer *A. nigripennis* than anything else in our lists, but differing from that insect in its shorter and more convex build, longer thorax, with a scarcely visible basal transverse depression, &c. (Ent. Mo. Mag., xii, 178).

(*To be continued*).

The Yorkshire Catalogue of Lepidoptera.—For some years, Mr. G. T. Porritt, F.L.S., of Huddersfield, assisted by the leading entomologists of Yorkshire, has been engaged upon a catalogue of the lepidopterous fauna of that county. The work has now been completed, and is to appear in the "Transactions of the Yorkshire Naturalists' Union," and the MS. has been placed in the printers' hands by the secretaries of that body. The list is very complete—probably, the best county list ever yet published,—and includes about two-thirds of the British species, that is, 1344 out of 2031. Full attention has been paid to the somewhat voluminous literature of the subject, as well as to information contributed by correspondents, the result being a very satisfactory summary of what is at present known.—WM. DENISON ROEBUCK, Sunny Bank, Leeds: *February*, 1883.

DESCRIPTIONS OF THREE NEW SPECIES OF *PAPILIO*.

BY H. GROSE SMITH.

Papilio Fulleri.

Upper-side dark brown. Both wings crossed from near the middle of the anterior-wing to the inner margin of the posterior-wing by an irregular band of olivaceous-yellow spots; five on the anterior-wing distinct, those on the posterior-wing confluent, intersected by the nervures. Anterior-wing with three spots towards the apex, the middle spot the smallest, the other two spots bifid; a spot within the cell next the sub-costal nervure, and near the upper disco-cellular nervule. Posterior-wing with a row of ten small spots in pairs near the outer margin, and three larger spots between the median nervules. All the spots of same colour as the band.

Under-side as above, but much paler, and tinged with red from near the centre, deepening towards the base. Posterior-wing with a round black spot on the pre-costal nervure, a black line between the costal and sub-costal nervures, and a black spot at the base. Exp. 3¾ inch.

Hab. Camaroons (Fuller); in the collection of H. Grose Smith. This species is between *Latreillianus* and *Ucalegon*, but is distinct; from the former principally in the colour of the spots and the markings on both sides of the posterior-wing, from the latter in the situation of the spot in the cell and in the double row of spots round the outer margin of the posterior wing.

Papilio Diophantus.

Upper-side dark brown. Anterior-wing broader and not so curved on the costal margin as in *Helenus*, which it resembles on the upper-side. Posterior-wing with a tail more spatulate than in *P. Helenus*, and tipped with cream colour, marked from the costal margin to the third branch of the median nervule by a large cream-coloured spot, divided by the nervures into four parts, the lowest much smaller and more lunular than the other three parts.

Under-side: anterior-wing with longitudinal rays of pale brown, narrowing from the centre of the wing to the interior margin to a band of same colour as the spot. The posterior-wing has at the base of the costa, and between the costal and sub-costal nervures, two broad lines of red, the latter nearly twice as long as the former, the large spot as above continued across the wing to the inner margin by a narrow band of lunular spots of same colour; there is a small spot of same colour at the anal angle, and another at the tip of the tail, the lunular spots between the nervures on the margin are more strongly marked than on the upper-side.

Exp. 4¼ inch.

Hab. Sumatra (Bock); in the collection of H. Grose Smith.

Papilio Forbesi.

Upper-side dark brown, almost black, the margins between the nervures with lunular white spots, very narrow on the anterior-wing, much broader on the posterior-wing, which is without tails. Anterior-wings with longitudinal rays on each side of the nervures of light brown, extending from the middle to the exterior margin. Posterior-wing with a row of three brownish-grey lunular spots between the median nervules, and a spot at the anal angle, above which is a row of three small faintly marked spots of same colour.

Under-side: anterior-wings rayed as above, but paler. Posterior-wing with a longitudinal red spot at the base, divided by the precostal nervure, which is black, and a small red spot below the costal nervure, a broad band of ochreous-yellow with a row of black spots in the middle, extending across the wing between the median nervules, and a small spot of ochreous-yellow beyond; a black spot at the top of the band next the anal angle, three blue spots near the exterior margin from the costal nervure to the median nervule. Exp. 4 inches.

Hab. Bandang Agang, Sumatra (Forbes); in the collection of H. Grose Smith.

This species belongs to the *Memnon* group, in which, however, there is nothing which resembles it.

London: *February*, 1883.

A marine caddis-fly.—In the report on the condition of the sea-fisheries of the south coast of New England, Washington, 1873, pt. i, p. 379, a phryganid larva in its case is noticed by me. The larva was found on the piles of a wharf at Menemsha. This is a bay in Martha's Vineyard Island, distant about a dozen nautical miles from the shore of Massachusetts. The small island has no river and no creek to speak of. Menemsha Bay is a real rock-pond among the rocky parts of Gayhead, connected with the sea. The only insects found there are the larvæ of *Chironomus oceanicus*, Pack., and a larva in a case similar to that of the European *Molanna*; so I recognised it at once. The larva, one-third of an inch long, was alive and in good condition. Although only one specimen was collected at the time, there is no doubt that it has to be considered as a marine animal, the more so as there is scarcely a possibility of its having been imported from fresh water. As I had no separate copies of the paper, and as it is not likely to come into the hands of an entomologist, the fact has been overlooked, but Mr. McLachlan's interesting paper induces me to draw attention to it.—H. A. Hagen, Cambridge, Mass., U. S. A.: *January* 11*th*, 1883.

[My notes, to which Dr. Hagen refers, appeared in Ent. Mo. Mag., xviii, p. 278, and xix, p. 46, and were published in detail in the Journal Linnean Soc., Zoology, vol. xvi, pp. 417—422. I was not unprepared to hear that some indication of "a marine caddis-fly" had previously appeared. Miss Clarke, of Boston, who honoured me with a visit last summer (and who is an enthusiastic student of the habits of Trichopterous larvæ), told me she thought a notice of a marine caddis-fly had been published in one of the American Fisheries Reports, but the information was too vague, and no citation of the important notice has (so far as I know) appeared elsewhere. So I am the more obliged to Dr. Hagen for this note. *Molanna* seems to me just the genus one might suspect of including marine species, and it is possible that the New Zealand genus (*Philanisus*) may be allied.—R. McLachlan.]

Acherontia Atropos taken at a bee-hive.—A specimen of *A. Atropos* was caught in the month of May, 1861, by my friend Mr. Lloyd, of Badminton, flying in the open daylight in front of his bee-hives, and apparently trying to enter one of them. He knocked it down and secured it, and finally impaled it on a large shawl pin, in which condition it refused to die, as he says, for several days.

It is now in the collection of my son Robert, and, considering that he set it some months after its capture, and taking into account the rough treatment it received from one who loves bees and hates their enemies, and its being left to die in the manner I have stated, it is a very respectable specimen of a fine female of *Acherontia Atropos*.

My son, who is a real lover of the science of entomology, has noticed this last season, that the male of *Pieris rapæ* has a distinct scent when alive. My eldest boy took a specimen of *C. jacobææ* in my garden, almost as black as *Odezia chærophyllata*.—C. Mathew Perkins, Sopworth Rectory, Chippenham: *January* 27*th*, 1883.

Hydrilla palustris and Pieris Daplidice at Cambridge.—Last July, Mr. Chas. K. Baker, of 72, King Street, Cambridge (and formerly master of the King Street Schools, in that town), was good enough to show me the collection of butterflies and moths formed by him in that neighbourhood some years ago. Amongst them was a fine specimen of *Daplidice* taken by him near Newmarket on the 5th August, 1868, also three *Lælia cænosa* bred from larvæ taken by him at Wicken. An unset *Noctua* also attracted my attention as being a species unknown to me. This he very kindly allowed me to take away and identify, and a comparison with the specimen in the late Mr. Allis's collection in the York Museum, showed me at once that it was a ♂ *Hydrilla palustris*, a conclusion which Dr. Battershell Gill has since verified. Mr. Baker has been so exceedingly kind as to give me both the Bath white and the *palustris*, for which I must here repeat to him my best thanks.—A. F. Griffith, Sandridge, St. Albans: *January* 30*th*, 1883.

Notes on Lepidoptera in Roxburghshire, season 1882.—The season of 1882 appears to have been throughout the country one of the most barren, with regard to numbers of *Lepidoptera*, experienced for many years. Following a mild and open winter, such a result might have been anticipated, and, judging in the same way the two seasons preceding, following hard winters with much snow, being very prolific, the obvious effect of the character of the seasons in reducing or preserving species is very marked. Larvæ also appeared to be equally scarce during spring and autumn. I have repeatedly noticed a peculiar variety of the larvæ of *Smerinthus populi* feeding on *Populus nigra* in a particular locality, each segment, excepting the 1st, 2nd, and 12th, having a rather large, purplish blotch just above the spiracles, and I have kept a few pupæ from these for observation. The group of *Noctuæ*, especially during June and July, were very sparingly represented, the autumn species being more numerous, but very deficient by comparison with average seasons. There were, however, a few exceptions, a few species appearing in numbers much as usual, notably, *Trachea piniperda*, *Plusia v-aureum*, &c., and among *Geometræ*, *Eupithecia pygmæata*; a beautiful variety of *Epunda lutulenta* occurs in the district, and also of *Ypsipetes elutata*, the latter having the fascia *white*. Excepting a few species, all the groups of *Macro-Lepidoptera* were very scarce; *Micros* appearing not to suffer to the same extent, although in both groups I have added species which I had not formerly taken here. Among the former, *Demas coryli*, bred from larvæ on sloe and sallow, and, although scarce, it appears pretty generally distributed in the district. *Aspilates strigillaria* I found pretty commonly in one locality, and took a good series in fine condition, and of *Eupithecia satyrata*, *exiguata*, *sobrinata*, and *tenuiata*, the latter very abundantly; I also took some beautiful fresh specimens of *pygmæata*, but at that time a course of boisterous and wet weather followed, and although I saw many specimens they were all more or less weather-beaten, and so, of little value. Of *Micro-Lepidoptera* I took the following: *Tortrix icterana*, *viburnana*, *Xanthosetia hamana*, *Argyrolepia cnicana*, *Amphysa gerningiana*, *Halonota trigeminana*, *Spilonota suffusana*, *Cnephasia politana*, *Pamplusia monticolana*, *Dicrorampha Petiverella*, *Ochsenheimeria Birdella*, *Pleurota bicostella*, *Gracilaria tringipennella*, *Coleophora albicosta*, *Lithocolletis Spinolella*, and *Pterophorus Bertrami*. Mr. Barrett has identified all the species enumerated.—A. Elliot, Laurieston, Jedburgh, N.B.: *January* 15*th*, 1883.

Note.—I reared a fine series of *B. quercus*, *var. callunæ*, the larvæ being fed exclusively on poplar and hawthorn.—A. E.

Destruction of Saturnia carpini by parasites, &c.—In the spring of 1880, I collected from heather, in this locality, somewhere about fifty cocoons of *Saturnia carpini*, the most of which presented an abnormal appearance, being very much discoloured, others had a small hole cut out of the side of the cocoons, these being quite empty. The perforated cocoons have been torn open, probably, by mice, and the pupæ extracted, being quite empty, no remains of pupa or larva-skin being visible. Two of the coccons contained a dead moth-pupa and a smaller rounded reddish pupa, being the pupa of a *Musca*; and the cocoons, with a mass of maggots at the bottom, produced *Cryptus fumipennis*, and plenty of the females of *Pezomachus insolens*, which were named by Mr. J. B. Bridgman. In one of the pupæ which was not quite normal in appearance, were three or four rather large white larvæ which I unfortunately destroyed. In the following July, I think, when crossing the same piece of heather, I picked up one or two discoloured cocoons, which, upon opening, I found to contain a yellowish cellular substance, from which some *Diptera* were just emerging in the perfect state. To give an idea of the extent of destruction from the causes mentioned, I may state that out of nearly fifty cocoons only three or four contained a healthy pupa of *Saturnia carpini*.—Id.

Entomology in the Isle of Harris, &c.—I spent a few days at the end of last September at Tarbert, in the Isle of Harris, and although the entomological results of my trip are very scanty, I thought that any records from so little known a locality, might be interesting.

In *Lepidoptera* I found *Leucania impura*, a dark and worn female, *Larentia didymata*, *Cidaria testata*, *Peronea ferrugana*, *Œcophora pseudospretella*. In *Hymenoptera*: *Myrmica ruginodis*, *Bombus Smithianus*, and *pratorum*, *Pezomachus Kiesenwetteri*, *fasciatus*, and *agilis*. In *Trichoptera*: *Molanna palpata*, *Anabolia cœnosa*, *Halesus digitatus*, *Limnophilus marmoratus*, *Plectrocnemia conspersa*, and

Tinodes luridus. In *Neuroptera: Potamanthus marginatus.* In *Coleoptera: Carabus clathratus, Geotrupes mesoleius, Antherophagus pallens, Helobia Gyllenhali, Pterostichus vitreus* and *nigritus, Notiophilus palustris, Trechus minutus, Hydroporus atriceps, Ilybius angustior, Agabus bipustulatus, Colymbetes bistriatus, Gyrinus minutus* and *natator, Calathus fuscus,* &c. In *Hemiptera: Gerris Costæ, Corixa variegata, fossarum, var. prominula, mœsta, Fabricii, Sahlbergi, Salda saltatoria, Ulopa ericæ, Velia currens,* &c. In *Diptera: Bibio pomonæ* and *clavipes, Simulium reptans, Hydrophorus nebulosus,* &c. I was surprised at not seeing a honey-bee nor grasshopper. At Tobermory, in the Isle of Mull, I captured *Gerris odontogaster, Cymatia Bonsdorffi, Corixa Scotti* and *Sahlbergi, Cychrus rostratus,* and *Staphylinus erythropterus.* On Ben Nevis I took *Acidota crenata, Hylurgus piniperda, Corixa sodalis* and *Wollastoni, Nemoura nitida.* At Nairn: *Hydræcia nictitans, Agrotis nigricans, Eristalis pratorum* and *nemorum,* off flowers of ragwort.—C. W. Dale, Glanville's Wootton, Sherborne, Dorset: *February,* 1883.

Coleoptera in Kent.—In spite of the very limited time at my disposal, I managed to do a little collecting in the neighbourhood of Erith during the past season, and met with a few things worth recording. Of these, the best were *Prionus coriarius,* of which a fine male example was brought to me, and *Hylotrupes bajulus,* of which I took two specimens in close proximity to the railway station. A single example of *Corymbites metallicus* was brought to me, together with several other things of lesser value.

During the early summer *Chrysomela lamina* was very abundant, as, rather later on, were also *C. Banksi* and *C. distinguenda; C. Banksi* was especially abundant, as, upon one occasion, I took over a hundred specimens in the course of half-an-hour. An old crab-shell, with a few remnants of flesh adhering to the interior, produced *Silpha thoracica* and various *Histeridæ* in swarms, and *Aleochara lata* was occasionally to be found under carrion on the marshes.

Among some things captured at Margate earlier in the year, I find a single specimen each of *Ilyobates forticornis* and *Homalium Allardi.*—Theodore Wood, 5, Selwyn Terrace, Upper Norwood, S.E.: *February,* 1883.

Obituary.

Benjamin Cooke died at Southport, Lancashire, on the 3rd February, aged 66. Of his very early life we know nothing, but, if we mistake not, he was educated at the Friends' School, at York, having had as school-fellows several well-known British Entomologists, some of whom survive him. Subsequently, he was engaged in a house of business in Manchester, from which he retired only a few years ago. Mr. Cooke was a collector of all Orders of British insects, and proved himself to be a student of them also. Latterly his attention had, perhaps, been more concentrated upon *Hymenoptera* and *Diptera.* He was a frequent contributor of notes to most of the Natural History and Entomological periodicals for many years past; there are few vols. of this Magazine without interesting notes from his pen. He was associated with the Entomological Society of London from the year 1865. His decease leaves a blank in a large circle of entomological friends and acquaintances, especially in the North of England.

ON THE SPECIES OF EUROPEAN *CRAMBI* ALLIED TO *C. PINELLUS.*

BY GEORGE T. BAKER.

Judging from experience, it is not improbable that many collectors in Switzerland pass over, by mistake, some of the *Crambi* allied to *pinellus*. The following short description of those European species which are brown or orange-brown, with a central white longitudinal stripe once or twice transversely divided may, therefore, be useful. (The transverse band excludes the *margaritellus* and *furcatellus* group, which is reserved for another paper).

Our group may be tabulated for convenience thus :—

A. Longitudinal stripe divided once only.

pauperellus, *conchellus*, *pinellus*, *mytilellus*.

Hue of ground unicolorous, stripe dull cream-colour ...*pauperellus*.
Ground colour more or less darkly shaded, stripe shining white... *conchellus*.
Ground colour almost unicolorous, an oblique white curved line beyond the longitudinal stripe ....*mytilellus*.
Such curved line wanting ....*pinellus*.

B. Longitudinal white stripe twice divided.

myellus, *speculalis*, *permutatellus*, *luctiferellus*.

Ground colour cinnamon, the two transverse bands oblique but straight, with an orange shade ....*myellus*.
With a brown shade...*speculalis*.
Hinder transverse band waved..........................*permutatellus*.
Ground colour dark olive-brown.........................*luctiferellus*.

PAUPERELLUS, Tr. (25 mm.).

Fore-wings ochreous-brown, with a pale ochre or cream-coloured longitudinal stripe, which is of a narrow wedge-shaped form, narrowest at the base, where it starts from the centre of the wing and is continued nearly to the hind margin; beyond the middle it is divided by an oblique transverse band of the same hue as the ground colour, in some specimens the hind margin of the posterior division is shelved off so as to be nearly parallel with this band. The fringe is whitish, with a dark dividing line. The hind-wings are uniform brown-grey with whitish fringes, having a dark dividing line as in the fore-wings.

Head, palpi, and antennæ pale ochre-brown. Thorax same colour as the upper wings. Body as the hind wings.

I have not taken this insect myself, but it is not uncommon in the Jura range, and I have also had specimens sent me from Hungary.

CONCHELLUS, Schiff. (26 mm.).

Fore-wings reddish- or cinnamon-brown, yellowish by the inner margin, with a shining white longitudinal stripe, once obliquely divided with red-brown. The ground colour is in some specimens slightly darker along the anterior and hind margins of the stripe, forming a darkish curved transverse shading nearer the posterior border, which is edged by a distinct dark line. The stripe is shining white, and nearly reaches to the hind margin of the wing, it is divided about the middle by a reddish-brown band ; the anterior division is narrowly wedge-shaped, the posterior an ovate rhomb, which sometimes is a distinct rhomboid, and at others the angles are so rounded off as to leave an ovate spot, at the anal angle of this division there is a distinct tooth. The fringes are white with dark intersections, aud having a dark dividing line.

The hind-wings are light brownish-grey, with a very fine dark marginal line ; fringes white, divided by a dark line.

Head, collar, and central part of thorax white ; palpi brown, edged above with white ; antennæ brown ; patagiæ reddish-ochre ; and the body is of the same colour as the hind-wings.

During the last week of June, 1880, my friend Dr. Jordan and I found this insect common at Zermatt, flying about the meadows on the Riffelberg, and last year it was very abundant in meadows near the Chalets not far from the Findelin Glacier.

The *a. ab. rhombellus* of Zeller has the posterior division of the white stripe of a distinct rhomboid.

PINELLUS, Linn. (20—23 mm.).

This is the only one of Div. A. found in England, and is accordingly well known. The ground hue of the fore-wings varies much in its intensity, from a pale yellow rust-colour to bright yellowish-cinnamon. As in the former species, there is a longitudinal white stripe, once divided by an oblique band, but the anterior wedge-shaped portion is much broader proportionately, and the hinder part more distinctly rhomboidal, its anterior margin being nearly parallel with the anterior margin of the wing, while in *conchellus* it slopes distinctly downwards. The wedge-shape part of the stripe is, at its termination, rather nearer the fore edge than the rhomboidal division, over which it appears to rise. The rhomb is bordered on the anterior and hind margins by a more or less distinct dark line, and its hind and basal margins are somewhat parallel, sloping from above downwards towards the base of the wing, but the anterior and inner sides somewhat diverge, owing to the posterior outline of the rhomb being much longer than that by the division. The ground colour of the wing is more or less distinctly shaded with darker brown, which is marked in the deeper outline of the hind division of the stripe, above the anterior margin of which there is a dark streak, and beyond it is a curved dark line, sometimes followed by a lighter one, reaching to the anal angle of the rhomboidal division which it borders. The hind margin is edged by a dark dotted line. The fringes are reddish, slightly intersected with dark patches, and having a dark dividing line.

The hind-wings are pale brownish-grey, with a fine marginal line of a darker hue ; fringes are grey, with a faint divisional stripe.

Head, and central part of thorax, white ; palpi reddish-brown, edged above and beneath by a white line ; antennæ brown ; patagiæ pale cinnamon-yellow ; the body being of the same colour as the hind-wings. Specimens from the Amoor country differ but little from our own ; the ground-colour is, however, paler, the white stripe is generally edged above, in its entire length, by an almost black line, and the dark stripe above the posterior division is much more marked.

This species can be easily recognised from the preceding by the hind divisions of the stripe being more distinctly rhomboidal, the wings much less unicolorous, and by its smaller size.

I have not yet met with this in Switzerland. In this neighbourhood it is not uncommon at Sutton Park, about 8 or 9 miles from here, and may generally be taken towards the end of July.

MYTILELLUS, Hb. (21—24 mm.).

The fore-wings of this species are darker than in any of the foregoing, the ground-colour being ochre-brown, and the ♀ being decidedly lighter than the ♂. The longitudinal stripe is shining white, divided by an oblique band of the same hue as the ground-colour, the anterior division of which is wedge-shape and the posterior a rhomboid, but the anal angle thereof is rounded off so as almost to make it a triangle with one side curved. Beyond the central stripe, which is sometimes bordered above and on each side with black, the posterior division having also a small dark streak above it, there is an oblique curved white line reaching from the costa almost to the inner margin. The fringe is shining ochre-brown, with a dark dividing line.

The hind-wings are brownish-grey, with paler fringes, divided by an indistinct line.

Head, and central part of thorax, white ; palpi brown, edged above with white ; antennæ and patagiæ cinnamon-brown ; the body is of a similar hue as the hind-wings.

This is easily known from the previous species by its darker colour, and the white transverse line beyond the longitudinal stripe.

This hardy little insect prefers pine woods to meadows, and is found at a considerable elevation. We have taken it at the end of June frequently, among the pines on the Riffelberg at Zermatt, at a height of about 6000 feet.

B. MYELLUS, Hb. (22—26 mm.).

The anterior-wings are yellowish-ochre, more or less shaded with red, with the white longitudinal stripe reaching nearly to the hind margin, twice divided by oblique bands of a reddish hue, the posterior division of which is almost linear and nearly parallel with the hind border of the wing. The ground colour surrounding the stripe on the anterior and outer margins is darker, being shaded with red, and above the second and third divisions are two streaks of a still darker reddish-brown, the upper one being shorter than the lower, and touching an indistinct light tooth just in front of the apex of the wing. The hind margin is darkly dotted. The fringe greyish-brown, with white intersections, and having a dark dividing line.

The hind-wings are pale grey, with whitish fringes that have an indistinct dividing line.

Head, collar, and central part of thorax, white; palpi brown, bordered on the upper side with white; antennæ reddish-brown; patagiæ pale ochre; body of the same colour as the hind-wings.

I have this very pretty species from Switzerland, and have also had it sent me from Heidelberg.

This is the only one of Div. B which has been recorded as British, a few specimens having occurred in Scotland. Thus, in the Entomologist's Annual for 1869, p. 126, one specimen is stated to have been taken "near Aberdeen" and another "in Scotland," without any more precise locality being given. Dr. F. Buchanan White (Ent. Mo. Mag., viii, p. 70) mentions having taken it at Braemar, and Mr. Warrington records its capture at Rannoch, at p. 113 of the same volume.

SPECULALIS, Hb. (25—27 mm.).

The ground-colour of the fore-wings is uniform cinnamon-brown, with the white longitudinal stripe twice very obliquely divided, above the second division of which is an indistinct dark streak, there is also a light tooth just in front of the apex of the wing; the inner edge of the wing is bordered by a narrow white stripe for about a third of its length from the base, the hind margin is finely dotted with black, the fringe being brown with white intersections, and having the usual darker divisional line.

The hind-wings are brownish-grey, with whitish fringes, divided by a dark line as in the fore-wings.

Head, and central part of thorax, white; palpi brown, edged with white above; the antennæ and patagiæ are of the same colour as the fore-wings; the body rather darker than the hind-wings.

This species is closely allied to *myellus*, but may be recognised by the uniform brown of the upper wings, by the stripe being more obliquely divided, and by its larger size.

This is again a hardy species, as I have found it up to about 6000 feet; it is not so common at Zermatt as some of the preceding, but still by no means rare. I have generally taken it in the meadows on the Riffel in company with *conchellus*. In the third week of June, 1880, we also took it in the Saas valley, where, on account of being very much shut in, we found all insects earlier than in the Visp valley. It is decidedly a commoner insect than the preceding species, with which it is so closely allied.

PERMUTATELLUS, H.-S.

As I do not possess an example of this species, I will give a translation of

Heinemann's description, but must draw attention to the fact, that it is entirely comparative with *catoptrellus*, Z., which he (Heinemann) considered a good species, but which Staudinger and Wocke catalogue as *a. ab.* of *specularis*. The description (of *catoptrellus*) seems to be made from a single specimen taken in the Austrian Alps, and it agrees so very closely with *specularis*, that it is necessary to repeat it here:—"Fore-wings cinnamon-brown, with a slightly shining white longitudinal stripe, very obliquely divided with two transverse brown lines, the hind oblique line and the hind division of the longitudinal stripe waved.

"Head and thorax cinnamon-brown. 5 lin.

"The fore-wings are narrower than in the preceding species (*catoptrellus*, *specularis*, &c.), widening less posteriorly, of a uniform pale cinnamon-brown, the inner margin narrowly white to beyond the middle. The longitudinal stripe likewise narrower, the transverse lines little darker than the ground-colour, very narrow and still more oblique, the posterior one, as also the hinder part of the longitudinal stripe, distinctly waved, in the fold rather further from the inner margin than from the anterior transverse line. The middle spot of the stripe with distinct angles, the sides towards the base and inner margin of equal length, that towards the costa perceptibly longer. The fringes a little paler, intersected with white in cells 3 to 5.

"Austria, from the Wasrigel Alps, end of July."

LUCTIFERELLUS, Hb. (25 mm.).

The anterior-wings are olive-brown, much darker in some specimens than in others, the white longitudinal stripe is once obliquely divided, the anterior portion being short and narrow, and increasing but little in width, the hinder part being of a rhomboidal shape, the apical angle of which is very acute and the anal distinctly toothed, beyond this is a white curved oblique line extending from the costa just in front of the apex of the wing to the inner margin, the middle portion appearing in some specimens as almost a continuation of the longitudinal stripe; above the posterior margin of the hind division, nearly touching the costa, is an irregular whitish mark; there is also an indistinct white line between the stripe and the inner margin, which (margin) is bordered by a white line once interrupted for about half its length. The hind border is edged with black.

Hind-wings greyish-brown, the fringes being of the same hue as the wings, with a darker dividing line, the upper ones being also intersected with white.

Head, palpi, thorax, antennæ and patagiæ olive-brown, and the body similar in colour to the hind-wings.

As the ♀ differs somewhat from the ♂, it will be necessary to enumerate the divergencies, which are as follows:

The ground-colour is paler and the longitudinal stripe wider, the white of its posterior division not unfrequently extending quite up to the inner margin, so that this edge is distinctly bordered with white almost to the transverse curved line, which is also wider than in the ♂, the whitish mark by the costa is larger, and is followed by another very indistinct one nearer the base of the wing. The fringes are white, with a dark dividing line, those of the anterior-wings having dark intersections. Head, and central part of thorax, white; palpi brown, edged above with white. The remainder is similar to the ♂.

I have never taken this very handsome *Crambus* myself. All the specimens were taken in the Swiss Alps, and I notice that Zeller in his catalogue of the *Chilonidæ* and *Crambidæ* says they are found at about the line of perpetual snow, which would mean at an elevation of something over 9000 feet.

a. var. LUCTUELLUS, H.-S. (22 mm.).

The ground-colour is clear olive-brown, with the white longitudinal stripe widening perceptibly outwards, *twice* divided, the middle part of which has four distinct angles, the anal one being toothed; there is also a white tooth on the costa in front of the apex of the wing. The inner margin is edged, with one interruption, with white for about two-thirds of its length, and the hind margin bordered by a dark line.

Hind-wings brownish-grey; fringes dirty white, with a dark dividing line, those of the fore-wings being intersected with white.

Head and palpi brownish; antennæ and patagiæ olive-brown; body similar to the hind-wings.

I have described these in their order according to Staudinger's catalogue, but it seems to me that the correct position of *luctiferellus* is immediately after *mytilellus*, as its white stripe is only *once* divided, and it has the white curved oblique line beyond as in that species, and the ground-colour is also more similar to *mytilellus*.

Again, its variety *luctuellus* has the stripe *twice* divided, so that this species evidently forms the connecting link between those *Crambi* that have the longitudinal stripe once divided, and those that have the same with two divisions.

Augustus Road, Edgbaston:
January 3rd, 1883.

DESCRIPTION OF THE LARVA OF *PAMPHILA LINEA*.

BY WILLIAM BUCKLER.

Of this long-wished-for larva I had the great pleasure to receive six fine examples on the 11th of last June, from Mr. W. H. B. Fletcher, who, most kindly mindful of my desiderata when finding himself at their locality in the eastern division of Sussex, on the evening of the 9th, succeeded in sweeping them from *Holcus lanatus*, a very soft pubescent grass, with which they assimilated both in colour and texture most remarkably well.

They had evidently done moulting, and continued feeding well on the above-mentioned grass from seven to fourteen days, and seemed rather to prefer it to *Brachypodium sylvaticum*, another soft-haired grass, which they also ate freely enough while the experiment suggested itself to me, during a part of the time, from the circumstance of my having a few years ago gathered some of it containing, quite by chance, a spun-up pupa, that shortly after produced this butterfly.

Their movements were very sluggish, and after eating a considerable quantity of food, they very slowly began one after another to enclose themselves within two, or sometimes three leaves of the grass, joined together longitudinally by lacing or spinning, with white silk, the edges more or less close to each other, and became completely hidden ; the earliest spun itself up on the 18th of the month, another on the 20th, and the others during the next three days.

The perfect insects, full-sized specimens, were bred on the 15th and 16th of July following.

The full-grown larva is 10 lines in length, its general figure of moderate substance, is stoutest in the middle of the body, and tapers a little from the thoracic segments towards the head, which is globular and projecting, larger than the second segment which is remarkably small and short; it tapers also gradually on the last four or five segments when seen from above, and when viewed sideways the back then appears to be slightly arched and sloping gradually to the anal flap, and this is a trifle flattened and rounded off behind ; the belly is flat and the legs are all well beneath it and rather short ; the segmental divisions are very delicately defined, also most particularly the sub-dividing transverse wrinkles, which by no means arrest attention unless diligently sought for : in colour the head is of a rather deeper green than that of the body, and rough with minute points, the upper lip of a pinkish hue is smoother and deeply channelled, the ocelli black ; the body above is of a tender and delicate light green ground-colour, without any gloss, and on the thoracic segments the skin is besprinkled with black points of extreme fineness, so that they do not affect the delicate colouring of the green ground ; the dorsal stripe is the darkest marking of green, and is very narrow on the second segment, and from thence uniformly wider until near the end where it becomes very gradually attenuated on the anal flap ; this dorsal stripe is of a darker, rather bluish-green, having a stoutish line of paler green running through the middle, and bordered outside in stronger contrast by a stout line of still paler green than the ground ; the sub-dorsal line is of the same pale green but thinner ; below, at a little distance, the trachea shows partly through the skin and on it can be discerned the rather prominent reddish flesh-coloured spiracles ; below these again, at a little distance, follows an inflated paler stripe of almost creamy-whitish, extending round the anal flap, which often hides the belly and legs from view when the larva is in repose, but at other times, when examined beneath, these are seen to be wholly green, excepting a transverse patch of white on front of the ventral surface of the eleventh and twelfth segments.

On tearing open the coarse reticulation of white silk which held the leaves together, and formed a lining to the oblong puparium an inch and a quarter long, I found the pupa itself to be of the length of 8½ lines and very similar in form to that of its congener *Actæon*,* having the end of the trunk lying free from the abdomen, held in position, head upward, by an oblique cincture behind the thorax, and the anal tip secured by a fan-like spread of fine hooks at the extremity fixed in the silk lining, but the head had the frontal tapering beak shorter and more bluntly pointed, the colour then was the same light green as that of the larva, of which the paler lines could still be faintly traced.

Emsworth: *March 10th*, 1883.

A NEW BRITISH SPECIES OF *CRABRO—C. KOLLARI*, DAHLB.

BY EDWARD SAUNDERS, F.L.S.

Mr. Billups has been fortunate enough to capture two males of this interesting species near Headley, and I find a male in my own collection, which was originally in Shuckard's, mixed with *C. interruptus*, De G.,=*Lindenius*, Shuck., but without note of locality. It very closely resembles *interruptus*, and the other yellow-banded species, but may be easily distinguished by the sculpture of the mesothorax, which is strigose behind and at the sides, but punctate in front across the middle, whereas, in *interruptus*, it is transversely strigose in front; from the other yellow-banded species the male may be known by its simple antennæ and tarsi and the sculpture of the thorax. The ♀ has not yet been taken in this country, so far as I know, but Dahlbom says that it agrees with the ♂ in sculpture; both sexes are rather smaller than *interruptus*: it may be briefly characterized thus:

Crabro Kollari, Dahlb., Hym. Eur., i, p. 415.

Head and thorax black, mandibles piceous at the apex and bifid, the teeth rather shorter than in *interruptus*. Antennæ simple, basal joint yellow, with a black line above. Prothorax with two yellow spots. Mesothorax punctured, with striæ diverging from the base, which leave a space on the anterior margin, which is simply punctured, and in which are two short carinæ originating from the anterior margin. Wings darker than in most species. Abdomen with lateral spot on the 2nd to 4th segments, and an entire band on the 5th and 6th, apex of the 5th and 6th and the entire 7th dark. 7th segment simple, not deeply impressed longitudinally as in *interruptus*, beneath brown, shining; legs with the femora spotted with black behind, the posterior pair entirely black; tibiæ more or less spinose.

Length, 10 mill.

Holmesdale, Upper Tooting:
14*th March*, 1883.

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* *Vide* Ent. Mo. Mag., vol. x, p. 87.

NOTES ON NEW BRITISH *COLEOPTERA* SINCE 1871; WITH NOTICES OF DOUBTFUL SPECIES, AND OF OTHERS THAT REQUIRE TO BE OMITTED FROM THE BRITISH LIST.

BY THE REV. W. W. FOWLER, M.A., F.L.S.

(*continued from p.* 233.)

LATHRIDIIDÆ.

Lathridius pini, Mots.

This is synonymous with *L. lardarius*, De G., and, therefore, must be erased.

Lathridius angulatus, Mann., and *L. angusticollis*, Humm.

There seems to be great confusion with regard to these two species: most collections contain plenty of so-called *L. angusticollis*, but not a single specimen of *L. angulatus*. One specimen of the latter is mentioned in Ent. Ann., 1867, 100, as in Mr. Wollaston's collection: it would seem, however, that in reality *L. angulatus* is a common British species, and that *L. angusticollis* is doubtfully British. The true *L. angulatus* is easily recognised by its elytra being studded with silky upright hairs arranged in rows, while *L. angusticollis* has glabrous elytra; traces of pubescence may be observed on quite fresh specimens, but this presents quite a different appearance to the pubescence of *L. angulatus*, which is very marked. M. Belon, of Lyons, who has kindly helped me with this point, says of some supposed type specimens of *L. angusticollis* (given me by one of the leading British Coleopterists), that they are most certainly *L. angulatus*, and he also says that he has received several specimens of *L. angulatus* from England, among them one wrongly named *L. angusticollis*. I have examined a number of supposed specimens of this species, and have not been able to find a single specimen of the true *L. angusticollis* among them, nor do I know of one in any collection with which I am acquainted.

Lathridius undulatus, Mots.

This is synonymous with *L. angulatus*, Mann., and must, therefore, be omitted.

Coninomus constrictus, Humm.

This species seems to come almost too near to *C. carinatus* to be retained as separate (L'Abeille, 249, 57). There seems to be only one British specimen known: this is in Mr. Rye's collection.

Enicmus minutus, Linn.

This very variable species seems to cause great confusion: there is a large dark form with almost quadrate thorax, which certainly seems to be a distinct species, and a short while ago I received a very curious minute form from Mr. Billups. M. Belon has corroborated both these forms as belonging to *E. minutus*; the great variation of this and other species of the *Lathridii* accounts for the numberless species that have been made and demolished by different authors.

CORTICARIA OBSCURA, Bris.

Allied to *C. serrata*, Payk., from which it differs in its rather larger size, and flatter and less oval build; it has a larger club to its antennæ, and the sides of the thorax are less rounded; the elytra have very light punctures and striæ. Taken by Mr. Rye and Mr. Champion in Richmond Park, 1871 (Ent. Mo. Mag., vii, 274).

Corticaria linearis, Payk. ?

I have two *Corticariæ* from Mr. Matthew's collection, which M. Belon has returned to me as unknown to him, but as near *C. linearis*. The species belonging to this group are very numerous, so I am unable at present to say which these two insects belong to.

Melanophthalma Wollastoni, Wat.

This insect (which occurs in abundance at Mablethorpe, where it was first taken by Mr. Wollaston) is apparently a variety of *M. transversalis*, Gyll., which is a very common insect on the continent, as it is here.

BYRRHIDÆ.

SYNCALYPTA HIRSUTA, Sharp.

Closely allied to *S. setigera*, Ill., but with much more coarsely punctured thorax and lighter coloured antennæ and legs; the erect setæ are longer, thinner, less clubbed, and lighter-coloured, and the depressed scale-like hairs on the thorax, are much longer (Ent. Mo. Mag., viii, 151).

PARNIDÆ.

PARNUS STRIATELLUS, Fairm.

This species may be readily distinguished from its allies by its much smaller size and the strong punctured striæ of its elytra. Taken by Dr. Power, at Norwich, and by Mr. Champion, at Chobham (Ent. Mo. Mag., xiv, 70).

LAMELLICORNIA.

There has been considerable confusion as to the synonymy of *Geotrupes stercorarius* and its allies: the following appears to be the probable solution of the difficulty:—

G. spiniger, Marsh., = *G. stercorarius*, Erichs., = *G. mesoleius*, Thoms.

This species has the abdomen longitudinally smooth in the middle.

G. stercorarius, Linn., = *G. putridarius*, Erichs.

This species has the abdomen entirely punctured and pubescent.

G. foveatus, Marsh., Steph.

This is probably a myth; or, if anything, it is, perhaps, a hybrid between the above (Ent. Ann., 1874, 96).

GEOTRUPES PYRENÆUS, Charp.

Allied to *G. vernalis*, L., but differs from it in being more shining, and narrower in proportion to its length, and in having the hinder angles of the thorax less obtuse and rounded; in the ♂ the teeth on the under-side of the tibiæ are five or six in number, instead of being at least eight, as in *G. vernalis*; the thorax is visibly punctured on the sides only (Ent. Mo. Mag., viii, 10).

Aphodius niger, Panz.

The supposed British examples of this species are only specimens of *A. plagiatus*, L., without the red markings on the elytra, so the species must be erased from the British list.

APHODIUS MELANOSTICTUS, Schupp.

This species comes near *A. inquinatus*, Fab., but, as a rule, is conspicuously larger with more developed limbs; it has the sides of the thorax entirely reddish-testaceous, and the markings resemble very closely those of *A. tessulatus*, Payk. Taken by Mr. Chappell in the Manchester district, and recorded by Mr. Rye (Ent. Mo. Mag., xv, 280).

PSAMMOBIUS PORCICOLLIS, Ill.

This insect has already been inserted in our lists (Ent. Ann., 1865, 70) on the authority of a single example in Mr. Kirby's collection, mixed with *P. sulcicollis*; it was, however, struck out, but must again be inserted, having been found in small numbers at Whitsand Bay, Cornwall, by Mr. J. J. Walker (Ent. Mo. Mag., xii, 62 and 108). It is larger than *P. sulcicollis*, with scarcely any trace of oblique ridges, and no large punctures, at the back of the head; it has a more ample thorax, and more strongly sulcated elytra, which are more coarsely punctured.

BUPRESTIDÆ.

Trachys nanus, Fab.

The insects that stand under this name in our collections are not *T. nanus*, Fab., but *T. pumila*, Ill., and the latter name must be substituted for the former (Ent. Mo. Mag., xii, 226).

EUCNEMIDÆ.

THROSCUS CARINIFRONS, De Bonv.

This species somewhat resembles *T. dermestoides*, L., from which it may be distinguished by its eyes being divided considerably beyond the middle by a narrow horny plate, by its thorax being (in the male at least) flatter, and very suddenly sinuously contracted towards the front from the lower third; by its more acuminate elytra and less stout tibiæ. Taken by Mr. Wollaston, Mr. Matthews, and others. I have received it from Mr. J. J. Walker (Ent. Mo. Mag., viii, 135).

Cerophytum elateroides, Latr.

The specimens on which this species rests are so few and so doubtfully authentic, that it had better be omitted. Dr. Power, who posesses one of the specimens, endorses this opinion.

ELATERIDÆ.

CARDIOPHORUS RUFIPES, Fourc.

A single example of this insect was taken by Mr. John Dunsmore in 1875 on Corkendale Law, the highest peak in Renfrewshire. It is smaller than *C. asellus*, shining black in colour, finely pubescent, with the antennæ entirely black, the femora and tibiæ reddish-testaceous, and the tarsi pitchy, with the base of each joint and the claws red (Ent. Mo. Mag., xii, 227).

SYNAPTUS FILIFORMIS, Fab.

This genus was accidentally omitted by Dr. Sharp; it comes between *Agriotes* and *Sericosomus*, and may be at once distinguished by its third tarsal joint having a large membranous appendage beneath, which covers the fourth joint, which is very small.

DASCILLIDÆ.

Microcara (*Helodes*) *Bohemanni*, Thoms.

This is now regarded as a variety of *M. livida*, and not as a separate species; it is smaller than the type, with the side margins of the thorax more raised, and less evident costæ on the elytra; it is also rather lighter in colour (Ent. Mo. Mag., ix, 154).

Cyphon pallidiventris, Thoms.

This is apparently the female of *C. nitidulus*, Thoms., and cannot, therefore, be retained as a separate species (Ent. Mo. Mag., ix, 154).

CYPHON PUNCTIPENNIS, Sharp.

Allied to *C. variabilis*, but shorter, broader, and more convex, and distinguished from all the varieties of this species by its extremely short, fine, and scanty pubescence; its elytra also are more sparingly punctured generally, although more closely punctured at the base. Dr. Sharp says that this is the species referred to in his Catalogue as *C. nigriceps*, Thoms., but that it is quite distinct from this. It has been taken at Rannoch and one or two other Scotch localities. Dr. Power has a long series of *C. nigriceps* which are certainly not *C. variabilis*, and perhaps are the true species. If they are identical with *C. punctipennis*, in all probability *C. nigriceps* will have to be omitted from the British list (Ent. Mo. Mag., ix, 155).

MELYRIDÆ.

DASYTES NIGER, Linn.

This very distinct species differs from all the others of its genus in having its thorax transverse, and its elytra very finely and closely punctured, and in its black colour. Taken by Mr. Champion, myself, and others in the New Forest (Ent. Mo. Mag., viii, 84).

LYMEXYLONIDÆ.

LIMEXYLON NAVALE, Linn.

This genus differs from *Hylecœtus* in having longer antennæ; its anterior coxæ are approximated instead of being far apart, and it has six ventral segments, and not seven, like its kindred genus. Taken in Cheshire by Mr. Sidebotham and also by Mr. J. Chappell, who has been most generous in distributing it to collectors (Ent. Mo. Mag., ix, 158).

(*To be continued*).

ON TWO OF THE SPECIES OF *GELECHIA* WHICH FREQUENT OUR SALT-MARSHES.

BY H. T. STAINTON, F.R.S.

Professor Zeller, in 1843 (Stettin. ent. Zeit., 281—283) pointed out how it might so chance that an author should begin by describing an insect from one species, and then, a few years later, add some finishing touches to his description from a totally different species; for he showed us very clearly that Linné, in 1746, in the First Edition of the Fauna Suecica (before names were yet given) correctly described our present *Plutella cruciferarum*, with "Habitat in Hortis oleraceis," and "volitat juxta terram," but in the second edition of the Fauna Suecica (1761) with the name "*Xylostella*" came the new habit: "Habitat in *Loniceræ xylostei* foliis," and the total omission of the "Hortis oleraceis" and the "volitat juxta terram," slight verbal omissions and alterations in the description also tending to show the new bias in the author's mind.

Six years later Linné, in the 12th Edition of the Systema Naturæ, continued the "Habitat in *Lonicera xylosteo*," but added "in *Cheiranthi* floribus." The description, however, is so touched up and altered as to apply solely to the insect long known as *harpella*, Hübner, *dentella*, Fabricius, &c., and for which I have myself preferred to retain the Linnean name of *xylostella*, leaving for the "kitchen-garden insect, which flies near the ground" the more appropriate name suggested by Zeller, in 1843, of *cruciferarum*.

We seem in the process, which must have passed through the mind of Linné, to see a new form of *evolution of species!*

I have been led to the foregoing reflections by finding myself rather in a difficulty, when seeking to ascertain which of two coast-frequenting species of *Gelechia* was the original *instabilella*.

It is now 37 years since Douglas wrote the description of *Anacampsis instabilella*, which appeared in the Zoologist for 1846, p. 1270. We there read that "this insect was by no means uncommon on the salt-marshes, near St. Osyth, Essex, in July, but when they rose from the herbage the wind blew so strongly, that it was no easy matter to catch them. It is a species that varies exceedingly both in colour and marking, but none of the varieties approach any hitherto named species."

In my volume of the Insecta Britannica (published in 1854) appears, at p. 126, the additional information "Mr. Douglas bred this species last autumn from larvæ he found at Brighton, in August, feeding on *Salicornia herbacea* and *Chenopodium maritimum*," and, in the

Entomologist's Annual for 1855, I announced I had bred "*Gelechia instabilella* from larvæ mining the leaves of *Atriplex portulacoides.*"

So far, I believe, only one species had really been under consideration, but in the Entomologist's Annual for 1856, p. 52, we are informed that "Mr. Shield bred this insect" [*instabilella*] "from larvæ found early in April, near Dublin, mining the leaves of *Plantago maritima*," and I am now of opinion that this *Plantago*-feeder is a distinct species.

Unfortunately, I seem to have looked upon these specimens from *Plantago maritima* as so essentially representing *instabilella*, that I insensibly modified my idea of that species, and when, in May, 1858, Mr. Thomas Boyd sent me some *Gelechiæ* from Cornwall, of which he had found the larvæ in the flower-heads of *Beta maritima*, I described them as a new species, under the name of *ocellatella.* My impression now is, that these were nothing but *Gelechia instabilella*, as described by Douglas, from specimens on the Essex coast.

The insect, in accordance with its name, varies exceedingly in colour, from ochreous to grey, and varies nearly as much in its markings, the black spots, which are generally present, sometimes disappearing altogether. In the spring of last year I had, through the kindness of Mr. W. H. B. Fletcher, an opportunity of breeding a considerable number of specimens, Mr. Fletcher having found the larvæ in some plenty in Shoreham Harbour, Sussex, mining the leaves of *Atriplex portulacoides.* As late as last November I was consulted by Mr. Harwood, of Colchester, as to some *Gelechiæ* he had bred from *Suæda fruticosa*, and I then referred them to *ocellatella*, and pointed out wherein they differed, as I said, from "the *true instabilella* ;" I now hold the opinion that these specimens from *Suæda fruticosa* were themselves the *true instabilella*, of which the name *ocellatella* must now sink as a synonym.

The unfortunate insect, which has for years been my idea of *instabilella*, and which Mr. Threlfall breeds from the roots of *Plantago maritima*, now finds itself nameless! I believe it has not been observed to feed on any other plant. Mr. Shield bred it from the leaves (and I have a figure of Mr. Wing's representing a plant of the *Plantago maritima* with a *leaf* mined), but Mr. Threlfall assures me that he only breeds it from the *root* (see Ent. Mo. Mag., xv, p. 89).

"On May 13th, 1877, I collected roots of sea-plantain on the banks of the river Wyre, for larvæ of *Gelechia instabilella*, which mine in the roots, and as far as present observation goes not in the leaf or stem. From these emerged about a dozen imagos of *G. instabilella* in July."

For this now nameless insect I would propose the name of *Gelechia plantaginella.*

Plantaginella is a larger and broader-winged insect than *instabilella,* it generally expands rather over 7 lines, *instabilella* rarely reaches 6½ lines, and some small specimens which Mr. Jenkinson obtained in the Scilly Isles, are considerably under 6 lines. In *plantaginella the apical nervures* of the anterior wings *are* generally more or less distinctly *indicated as grey streaks* on the brown ground-colour. The pale sub-apical spots are much more faintly expressed than is often the case in *instabilella,* for I must admit that this latter species is very variable in that respect. Beyond the pale sub-apical spots we generally see in *plantaginella* about 8 black spots round the apex of the wing; even this character is, however, not constant, as I have specimens of *plantaginella* without them, and I have some of the paler specimens of *instabilella* which show them indistinctly. In both species we see occasionally a dark streak from the base down the centre of the wing.

The larva of *plantaginella* should differ essentially from that of *instabilella,* having the head and second segment black, whereas, in the larva of *instabilella,* the head is pale yellowish-brown and the second segment pale greyish-white. Moreover, the larva of *plantaginella* shows no trace of the four dull reddish interrupted lines along the back, which we see in the larva of *instabilella.*

Referring to vol. 2 of the "Manual of British Butterflies and Moths," p. 340, the descriptions of the imago there given of *ocellatella* and *instabilella* both refer to the same species—*ocellatella* representing a more ochreous specimen, and *instabilella* a greyer specimen of *instabilella;* but the two larvæ there described are those of the two distinct species, that described as the larva of *ocellatella* being really the larva of *instabilella* (of which *ocellatella* is merely a synonym), but that described as the larva of *instabilella* is really that of *plantaginella.*

The larva of *instabilella* seems to feed indifferently on any salt-marsh plants of the Natural Order *Chenopodiaceæ,* having been found on *Salicornia herbacea, Suæda fruticosa* and *maritima* (*Chenopodium maritimum,* Sowerby), *Beta maritima* and *Atriplex portulacoides.* Mr. Threlfall mentions (Ent. Mo Mag., xv, p. 89) having bred this species from larvæ "mining the leaves of *Aster tripolium.*" Should this be confirmed, I should suspect the larva to be altogether polyphagous.

Mountsfield, Lewisham:
March 10*th*, 1883.

SIMULIUM FEEDING UPON CHRYSALIDS.

BY DR. H. A. HAGEN.

In Colville Valley, Washington Territory, July 24th, I had the chance to observe the destruction of the pine trees (*P. ponderosa*) by the caterpillar of a butterfly (*Pieris menapia*). The details will be published in the Proc. Boston Nat. Hist. Soc. Small flies were very numerous around the chrysalids and caterpillars ready for pupation. These flies were so eager and so little shy, that they could be almost taken with the hands. They proved to be the "black fly" (*Simulium*). There is scarcely any doubt, that they live on the defenceless chrysalis, probably sucking the tail, as I found among the alcoholic specimens some flies still hidden in the dense tail-silk. The fresh chrysalis is rather lively. One on a young shoot of pine made the most convulsive motions, when only a leaf was touched. The end of the tail would be just the spot most difficult to defend against disturbance from an enemy. Perhaps, the curious fact that the numberless chrysalids in the crevices of the pine trees were all hanging down, instead of being erect and kept in this position by a thread around the body, may be the consequence of the constant attacks by these flies. The threads may have been finally broken by constant convulsions. The circumstance that a large number of the chrysalids were dry and dead without containing parasites, speaks in favour of the supposition, that they have been emptied by the constant sucking of *Simulium*. It is generally accepted, that *Simulium* lives only on warm-blooded animals. But it is obvious that these millions of little flies would, in this case, have no chance of food. Large animals shun as much as possible such places where *Simulium* swarms in the day time, and smaller animals are certainly not so common as to be sufficient for their food. If it is accepted that *Simulium* can live on insect-blood—and there is, indeed, no reason to doubt it—at once their existence is easily understood. May this not be the same with mosquito females? The species of *Simulium* seems to be identical with the common New England "black fly," but as this species is still undescribed, a detailed comparison has to be made to decide about the identity. It was, indeed, wonderful, that our whole party of five men and eight horses were not molested at all by the flies on those places, though they were more than annoying in other places where the butterfly was wanting. The seemingly strange assumption that *Simulium* may feed on caterpillars and chrysalids is corroborated by the discovery that *Pulex irritans* feeds upon caterpillars (Entom. xv, p. 70). The stomach fluids of the fleas were found by Mr. Boden transparent, and not red in colour, as when they have fed upon mankind. Those larvæ which had been attacked by the fleas appeared to pine away and die.

Perhaps, *Acræa Thalia*, in Brazil, and *A. Vesta*, in the Himalaya, are attacked in the same manner as *P. menapia*. Of both I have received very large numbers, collected at Cantagallo and Kooloo. The chrysalids were bundled together, as in *P. menapia*, and also partially dry—perhaps, from the same cause.

Cambridge, Mass.:
February, 1883.

ON SOME AUSTRALIAN *PHYCIDÆ*.

BY E. MEYRICK.

It seems advisable to publish at once the following additional notes to my list of Australian *Phycidæ*, in view of M. Ragonot's forthcoming monograph of the group.

Zophodia ensiferella, Meyr. The ♀ has the fore-wings narrower, paler, and redder than in the ♂, the hind-wings whitish instead of grey, and the abdomen very elongate and curiously depressed posteriorly.

Cateremna leucarma, Meyr. The larva forms true galls on shrubs of *Eucalyptus oleosa*; the galls are long, irregularly cylindrical, apparently formed of a metamorphosed cluster of leaves.

Salebria gypsopa, *n. sp.*

♂ ♀. 17--21 mm. Head dull white. Palpi whitish, sprinkled on sides with dark fuscous; maxillary tufts of ♂ ochreous. Antennæ grey, annulated with paler. Thorax white, sprinkled with dark fuscous. Abdomen whitish-ochreous. Anterior tibiæ dark fuscous, apex whitish; middle and posterior tibiæ whitish, sprinkled with dark fuscous, with a dark fuscous sub-apical ring; all tarsi dark fuscous, with whitish rings at apex of joints. Fore-wings elongate, narrow, gradually dilated, costa nearly straight, arched towards apex, hind-margin obliquely rounded; white, irregularly clouded with pale ochreous, and irrorated with dark fuscous; first line oblique, slightly curved, double, dark fuscous, enclosing a whitish line, forming a white spot on costa, inner edge broadly dark fuscous, deepest towards costa, outer edge slender, broken or indistinct; an elongate dark fuscous suffusion along middle third of costa; a black dot in disc beyond middle, situated on lower margin of a short, longitudinal, clear, white streak; second line double, dark fuscous, enclosing a whitish line, margins well-defined, faintly dentate, shortly angulated inwards above middle, outwards in middle, and again inwards above inner margin, posterior edge broader and more suffused towards costa; hind-margin suffusedly dotted with dark fuscous; cilia whitish, with fonr irregular fuscous-grey lines. Hind-wings pale ochreous-grey, with a suffused dark fuscous hind-marginal line; cilia whitish, with a fuscous-grey line near base.

Differs from all the other Australian species of *Salebria* (except, perhaps, *S. digrammella*, Meyr., which I have not been able to examine in this particular), in having vein 3 of the hind-wings rising from the angle of the cell, and not from the stalk of 4 and 5; also distinguished by the white ground-colour, and sharply expressed transverse lines.

Taken very commonly in October near Adelaide, in salt-marshes, amongst *Salicornia australis* and *Cotula coronopifolia*; also at Port Wakefield, South Australia.

TYLOCHARES, *n. g.*

Tongue moderate. Antennæ of ♂ dentate, finely ciliated, with a large tuft of scales in sinuation at base. Maxillary palpi in ♂ long, filiform, with two separate, very long, terminal hair-pencils; in ♀ short, filiform. Labial palpi moderate, curved, ascending, terminal joint short. Fore-wings with 11 veins, 4 and 5 stalked, 7 and 8 stalked. Hind-wings with seven veins, two from close before angle of cell, 3 and 4 stalked, 6 and 7 stalked.

This genus differs from all the rest of the group with basal tuft of the antennæ (except *Dioryctria*, Z., which has 8-veined hind-wings), in having veins 4 and 5 of the fore-wings stalked, and is also remarkable for the double tuft of the maxillary palpi in the ♂, which I do not think has been noticed in any other species. I have formed it for the reception of *cosmiella*, Meyr., hitherto classed with *Euzophera*, in the absence of the ♂, the neuration being very similar; I recently took both sexes in Wirrabara Forest, South Australia.

Heosphora euryzona, *n. sp.*

♂ ♀. 17—22 mm. Head and thorax whitish, mixed with dark fuscous, sides of frontal cone dark fuscous. Antennæ pale grey. Palpi whitish, externally suffused with dark fuscous. Abdomen whitish-grey, basal half rather bright ochreous. Legs dark fuscous. Fore-wings elongate, moderate, slightly dilated, costa moderately arched, hind-margin very obliquely rounded; grey-whitish, irregularly irrorated with dark grey; a straight, clear, white, sub-costal streak from base to costa before apex, leaving costal margin very narrowly dark fuscous-grey, upper edge rather suffused posteriorly, lower edge sharply defined, bordered beneath by a dark fuscous-grey streak suffused into ground colour: cilia pale grey, with rows of whitish points. Hind-wings whitish-grey, somewhat darker towards apex; cilia whitish, with a faint grey line.

Superficially very different from its congeners, and closely resembling *Zophodia neotomella*, Meyr., but easily known by the ochreous band of the abdomen, and, of course, very distinct structurally.

Locally common in Wirrabara Forest, South Australia, frequenting the spinifex grass in October; it is an inactive insect, the ♀ flying slowly and feebly at dusk.

The antennal tuft of the ♂ is very ill-defined, appearing little more than a thickening with rough scales.

Christchurch, New Zealand:
January 15*th*, 1883.

Entomological collecting during a voyage in the Pacific.—[The following extracts from a letter addressed to the Rev. W. W. Fowler, in continuation of former communications (*vide* E. M. M., xviii, 81, and xix, 22), have been kindly placed at our disposal.—Eds.].—The entire Pacific Squadron, consisting of seven ships, left Callao on February 13th for an evolutionary cruise to the southward. We ran out to lat. 33° S. long. 93° W. before shaping a course for Juan Fernandez. The weather was very fine, with light winds and smooth water, but the absence of animal life, at more than 100 miles from the South American coast, was most remarkable. For weeks together we did not see a living creature in the sea or air, this part of the South Pacific being a veritable ocean desert. After the first week or two the cruise became very monotonous, and every one in the Fleet, I believe, was truly glad to see terra firma again on the morning of March 17th, when we sighted the island of Juan Fernandez. The ships anchored in Cumberland Bay, a small and rather exposed indentation in the north coast of the island, the same afternoon, and remained until the 20th. I do not think I have seen anything to equal the scenery here since leaving the straits of Magellan; the bay being roughly semicircular in shape, walled in by steep and rugged hills, which are densely wooded in their higher portions, even on slopes so steep as to deserve the name of precipices, where one would think that no tree could find root-hold. These hills culminate in a huge flat-topped mountain, a most striking object from the anchorage, called the "Yunque" or Anvil, from a fancied resemblance which it bears to that article in outline. There is very little level or cultivated ground; near the beach are the remains of a small Spanish Fort, and a few wooden huts occupied by the 50 or 60 inhabitants of the island, who live by fishing, tending cattle, and cutting timber, as well as seal-hunting in the season.

I was able to land two or three times, and ascended the hills some 2000 feet, to "Selkirk's Look-out," a slight dip in the central ridge of the island, where a cast iron tablet is erected to the memory of that famous mariner, and whence a magnificent view is obtained. The vegetation is extremely luxuriant and varied, a sweet-scented myrtle forming a large portion of the undergrowth, and wild peach trees (said to have been introduced by Anson in 1741) are abundant. A few palm trees still linger on the higher and less accessible slopes, but have been nearly exterminated by the settlers, the wood (called here "Chonta") being in great demand at Valparaiso for walking sticks. I met with many familiar English plants, such as wild strawberry, teazle, sheep's sorrel, vervain, wild radish, thistles, docks, &c., and, at elevations greater than 500 feet, the common balm (*Melissa officinalis*) formed a large portion of the herbage. The most noticeable feature of the vegetation, however, is the extraordinary luxuriance and beauty of the ferns, of which I observed more than 20 species, some of them almost deserving the name of tree-ferns. In damp places the "Panke," *Gunnera scabra*, grows very luxuriantly; this is the grandest herbaceous plant I have ever seen; six or eight gigantic leaves, a yard or more in diameter, shaped somewhat like those of the sycamore tree, and with round scabrous footstalks four feet long and as thick as one's wrist, spring from a rough brown horizontal stem eight or ten feet long and as many inches in diameter, the small reddish flowers growing in a loose erect spike about two feet long. The leaf-stalks are eaten by the inhabitants, and somewhat resemble rhubarb; nearly every one of them was bored by a Lepidopterous larva, and by splitting them open I got a number of pupæ, which produced a curious silky-looking, broad-winged, dark brown *Noctua*, whose affinities

I cannot make out, but I think it comes somewhat near *Gortyna*. Two weevils of the family *Cossonidæ* occurred in the sinuses bored by the larvæ in the stems, and, by diligently working at stumps and felled trees, I got five or six more species of this interesting family, some in profusion. A very fine weevil, like a *Larinus* in aspect, but allied I think to *Cryptorhynchus*, occurred commonly under loose bark, with a few small "Staphs," &c.; by turning stones I found a few *Geodephaga*, a small *Opatrum?*, and a *Baridius*; and an *Agabus* in standing water. About 20 species of *Coleoptera*, in all, occurred to me, but the *Lepidoptera* were much more poorly represented. The only butterfly I saw was *Pyrameis Carage*, which was not rare, the specimens being rather larger and paler than Chilian examples. About half-a-dozen inconspicuous species of *Phycidæ* and *Crambidæ* were numerous, as individuals, in open grassy places, and one specimen of the ubiquitous *Stenopteryx hybridalis* occurred. *Plutella cruciferarum* was common among wild radish. The woods swarmed with humming birds, especially a lovely little species (*Eustephanus fernandensis*, I think) which is peculiar to the island, the male being bright chestnut-red, with metallic-red head and green wings, and the female elegantly spotted with green and white. These little fellows were wonderfully tame and familiar, frequently perching within arm's length of me while I was busy working at a stump or log. Fish were very plentiful in Cumberland Bay, and of excellent quality; great quantities were caught with hook and line, and furnished a welcome supply of fresh food, which we all duly appreciated, after living for nearly a month on salt beef and pork.

The weather during our brief stay at Juan Fernandez was fairly fine, but heavy squalls of wind came down from the hills, especially at night, rendering the anchorage somewhat insecure. A large part of the squadron had to put to sea hurriedly on the evening of the 20th, and were joined by the remaining ships next morning. Valparaiso was reached on the 23rd, and the Fleet remained there until April 13th. It was too late in the season for many insects, but I got some nice weevils and small *Heteromera*, as well as not a few obscure looking *Noctuæ*, under stones, and found the handsome and very variable larva of *Deilephila spinifascia* locally abundant on the "Quills" (*Muhlenbeckia injucunda*), a shrubby, wiry polygonaceous plant with small hastate leaves, growing in waste places. A day's visit to the beautiful and fertile valley of Quillota, 23 miles N. E. of Valparaiso, produced one or two butterflies (*Pieris Demodice*, Blanch., &c.), which I had not previously met with.

The Fleet arrived at Coquimbo on April 15th, and remained there till May 1st, when it left again for Caldera. Butterflies were here a little more plentiful than at Valparaiso, the lovely *Pyrameis Terpsichore*, Phil. (closely related to *P. Huntera*), being abundant and in splendid condition. The clouded-yellows, *Colias Vautieri* and *rutilans*, were plentiful and fine, and two or three specimens of the recently-described *C. minuscula*, Butler, a pretty miniature of *Vautieri*, occurred to me. The larvæ of *Papilio Archidamas* were very abundant on the evil-smelling *Aristolochia chilensis*, and a fine *Hepialus*, somewhat like our *velleda* in aspect, occurred not rarely at rest on bushes, &c.

The "Kingfisher" left Caldera on May 6th for the Northern Ports, and, after calling in at Callao for a day or two to coal, &c., arrived at Panamá on May 26th. Twelve days were spent here and at Taboga, during which time I worked hard at the *Lepidoptera*, with fair success, though not nearly so much as I had expected. It was the very end of the dry season, and, for a dozen butterflies which were to be seen any day, wet or dry, when I was here in October, 1881, there was scarcely one now, with the exception of the "hairstreaks," which were much better represented. Two or three lovely little purple species, barred beneath with black, white, and rust-red, which I had not observed before, were now not rare. A fine *Megalura*, a handsome brown Nymphalid butterfly, with paler transverse bars and great tails to the hind-wings, was occasionally caught on board the ship; and the lovely green and black-tailed butterfly-moth, *Urania Leilus* was frequently seen on the wing towards sunset, flying, however, so high, and at such a tremendous pace, that I could not secure a single specimen. At Taboga, from May 29th to June 3rd, I got several nice fresh *Theclæ* and skippers, the curious long-tailed, angular-winged, fulvous and brown *Marpesia Thetis*, as well as two very fine Sphinges; and, by sugaring the trunks of orange-trees in the day-time, I attracted some fine specimens of the handsome *Gynœcia Dirce, Prepona Demodice*, and *sp.*, and two or three other *Nymphalidæ*, including the great brown and orange *Aganisthos Orion*, which I failed to secure, to my extreme disgust. Two or three fine *Elaters* and longicorns also visited the bait.

On June 6th, I made an excursion to Emperador, a station on the Isthmus railway, about twelve miles from Panamá, in the midst of a magnificent primeval forest. Although a tremendous thunderstorm came on soon after noon, and put a stop to collecting for the day, I was not unsuccessful, as I observed many insects which I had never seen at Panamá, and added eighteen species of butterflies to my collection, among them some lovely transparent *Ithomias*, &c.

We left Panamá on June 8th, and entered the Gulf of Nicoya on the 11th, anchoring for a day off Puntarenas, the chief Pacific seaport of the republic of Costa Rica. This little town (the cleanest, by the way, which I have seen on this part of the coast) is built on a low sandy spit covered with thorny brushwood, extending about three miles into the Gulf. There is not much forest in the immediate neighbourhood, but I managed to get a good many insects in a short walk on the shore, mostly of species previously met with at Panamá, and including a very fine series of the richly coloured *Colænis Phærusa*, hitherto very rare to me. The roadstead of Puntarenas is notorious for the abundance of sharks, of which we saw a large number, one, in particular, was a monster, its length being estimated at thirty feet at least.

After a pleasant passage of a week's duration, in which we encountered great numbers of turtle, we anchored in the beautiful land-locked harbour of Acapulco, which, being almost surrounded by high forest-clad hills, and cut off from the sea-breeze, was as hot as an oven. The town, which contains about 4000 to 5000 inhabitants, is of poor appearance, though it seems to have seen better days: the aspect of the country is much more tropical than even at Panamá, owing to the large groves of fine cocoanut palms which fringe the beach of the harbour. During our brief stay of four days, the weather (except on the 22nd, when it rained almost without intermission) was fine and sunny, until late in the afternoon, the day usually ending with a heavy thunder-shower; but it was too hot for the active exertion necessary in the chase of tropical butterflies. I managed, however, with the assistance of one or two of my messmates, to obtain a very nice lot of insects, including nearly eighty species of butterflies, forty-two of them being new to my collection.

(*To be continued*).

Longevity in a beetle.—On the 15th April, 1878, M. Réné Oberthur sent to me from Rennes a living pair of the well-known *Dytiscus Rœselii*, Fab.; the insects came by post in a small tin box with some wet moss, and arrived apparently in perfect health; they had a fresh appearance, and as the larger *Dytiscidæ* are, I believe, all transformed to perfect insects at the end of summer or in the autumn, they had probably, at that time, been perfect insects for about six or eight months; they may have been older than that, but I do not consider it probable they were. The insects, on their arrival, were placed in a vase of fresh water, and were fed at intervals on pieces of earth worm or tadpoles, and seemed to be quite healthy under this *régime*. The male died about two years since in the spring, but the female has continued vigorous until recently; at the commencement of the present month she was noticed to be weak and disinclined for food, and though she took small quantities of nourishment two or three times after this, she did not recover her activity, and on the 9th instant was found dead. Thus this specimen had lived nearly five years with me in this vase of water, and had pretty certainly been a perfect insect for a period of about five and half-years, if not longer. The earlier stages in the metamorphosis of the *Dytiscidæ* are, I believe, all passed through with rapidity, so that the total duration of life of the individual under discussion would be about five and three-quarter years, or less, at any rate, than six years. Sir John Lubbock has, I believe, recorded as great, or even greater, a longevity in the case of some ants, but such a long life has, so far as I am aware, not been previously observed in any beetle. Lacordaire, in his Introduction à l'Entomologie (Vol. I, p. 214) when discussing the duration of life of insects, alludes to the fact that Rœsel kept an individual of *Cetonia aurata* alive for nearly three years, and Esper a specimen of *Dytiscus marginalis* for about three and a half years.

Two days after the decease of this specimen, I made a slight examination of its internal organs, in order to ascertain the condition of the ovaries. On opening the hind-body the most remarkable object was the bursa copulatrix, or spermatic vesicle, which was of enormous size, distended and occupying about one-fourth of the area of the hind-body or abdomen. The ovaries were small, and their tubes contained no eggs, but were full of an albuminous substance with darker spots in it, the material I imagined of undeveloped ova. The bursa copulatrix, on being opened, was found to be full of a clear fluid, which, after a moment or two, became very slightly milky, and gave forth an extremely powerful fœtid odour, similar to that which collectors who have captured the larger *Dytiscidæ* must frequently have noticed, as being the result of a discharge of liquid from the extremity of the body. The condition of the ovaries surprised me; as I have no reason for supposing that eggs have ever been deposited by this individual, I had expected to find the ovaries much more largely developed. According, to my experience, it is extremely difficult to obtain oviposition from the larger *Dytiscidæ* in confinement; Dr. Régimbart has, however, been more successful, and it would appear from his observations (Ann. Soc. Fr., 1875, p. 201) that special conditions are necessary to induce the female to lay her eggs; it would, indeed, seem, if we may judge from the condition of my specimen of *D. Rœselii*, that even up to the period of the extreme limit of life, and long after fertilisation (for such occurred in the present case) the eggs do not become developed in the ovaries unless the individual be placed in circumstances suitable for their deposition. Such an important physiological induction as this requires, however, more complete observation and verification; and at present I only suggest it, for there is more than one way in which I may have been deceived in the present case; for instance, eggs may have been deposited and not noticed when the water in the vase was changed.

I may add, that during their captivity here, these specimens were carefully fed and tended by Mr. Samuel Hyslop, and that at no period of their existence did they shew any symptoms of the extreme voracity previously recorded in the case of this species, as well as in other *Dytiscidæ*. Indeed, although during a period of ten years I have kept and observed many species of water-beetles, I have never observed any instance of great consumption of food. They are very fond of tadpoles, but do not consume an inordinate quantity of them; sad to say, they are remorseless cannibals. Perhaps the greatest amount of voracity I can record, is due to a male of *Dytiscus lapponicus*, who in one night completely devoured an immature female of his species, eating even such parts of the wing-cases and skeleton that were not too hard for his jaws to crush.—D. SHARP, Thornhill: *February 14th*, 1883.

Coleoptera in 1882 *in the Hastings district.*—Last year was a very peculiar season: many insects that were tolerably plentiful in 1881, were barely represented; circumstances prevented me from doing much hot-bed collecting, and what I did was chiefly in May. The best things obtained in this way were *Magdalinus barbicornis*, ♀, a single specimen only; *Monotoma longicollis* and *4-collis*; a few *Clambus armadillo* and *C. pubescens; Hister bimaculatus; Euplectus sanguineus* and *E. signatus; Microglossa suturalis.*

Guestling sand-pit has yielded very little this past season, the best captures by far were two specimens of *Trichonyx Mærkeli*, found about May 27th. *Zabrus gibbus* and *Plinthus caliginosus* also put in an appearance. I also found *Cœnopsis Waltoni*, a good many *Syntomium æneum* and *Syncalypta spinosa.* In a sand-pit at Battle I found a *Philonthus*, with red elytra, which the Rev. H. S. Gorham has kindly determined as a variety of *P. fumigatus.* At the Powder Mill Ponds, Battle, *Donacia semicuprea* swarmed: *D. impressa* and one *D. sagittariæ* occurred.

At Camber, on June 12th, *Crypticus quisquilius* and *Microzoum tibiale* were plentiful. *Saprinus rugifrons*, *metallicus*, and *maritimus* were found, the two former crawling on the bare sand, the latter in carrion; a single *Sarrotrium clavicorne* appeared, also *Phytosus balticus* under stones beneath high-water mark, and *Aleochara obscurella.*

Glaucium roots, growing at Pett and Bopeep, seem to be very productive; among a host of things hibernating in the cavity at the crown of the root, were *Ceuthorhynchus verrucatus*, *Corticaria crenulata* and *curta*, both the latter in abundance; three *Syncalypta hirsuta* I was not sorry to add to my collection from the same source. The most abundant insect, however, was the Hemipteron *Monanthia cardui.*—EDWARD P. COLLETT, St. Leonards-on-Sea: *3rd February*, 1883.

Specific distinctness of Cucujus coccinatus and C. Grouvellii.—There seemed to be some doubt on the continent as to the fact of *Cucujus coccinatus*, Lewis, Ent. Mo. Mag., xvii, p. 198, from Japan, being distinct from *Cucujus Grouvellii*, Reitter, from the Himalaya mountains, so last week I sent specimens of the former to M. René Oberthür, who possesses Reitter's type; and, to-day I received the following memo from M. Oberthür, written after a careful comparison of two insects side by side:—"Les *Cucujus Grouvellii* et *coccinatus* sont deux espèces bien distinctes. Le *C. Grouvellii*, diffère du *coccinatus* par ses élytres mates et non brilliantes, sa taille plus grande, sa forme plus allongée, les épines du bord de son prothorax plus nombreuses (ce dernier un peu plus fortement ponctué), sa tête moins large, ses lobes infrà-oculaires moins saillants et plus parallèles, ses antennes un peu plus robustes, et la couleur de ses élytres moins vive. Il n'y a aucun doute assurément."

Cucujus Davidis, Grouvelle, 1881, = *C. imperialis*, Lewis, 1879; and Mon. Ancey's specimen from Cheefoo, which I noticed before, belongs to this species.—GEORGE LEWIS, 39, High Street, Wimbledon: 12*th February*, 1883.

Reviews.

ANTS AND THEIR WAYS, with Illustrations and an Appendix, giving a complete List of Genera and Species of British Ants. By Rev. W. FARREN WHITE, M.A., M.E.S.L. 8vo, pp. 1—279. London: Religious Tract Society.

The above is the title of a very nicely got-up and readable little book, which has recently appeared under the auspices of the Religious Tract Society. It owes its origin, as the author tells us, to a series of papers written by him in "The Leisure Hour" during the year 1880, and the substance of these, together with the additional information collected by him since the time of their publication, are incorporated in the present volume. He gives an interesting general account of the habits and modes of life of our British Ants, glancing also at those of their continental and exotic allies; and to the text are added numerous woodcuts illustrating the peculiarities in structure of many of the more interesting forms, &c. He concludes his book with a chapter on the Termites, or "White Ants," and adds an Appendix, giving a list and short descriptions of all the species found in Britain, whether introduced accidentally or not. It is a book which we feel sure will be read with pleasure by those who are interested in these instructive little creatures.

The author, besides giving the results of his own long experience, adds to the interest of his narrative by quoting largely from Sir John Lubbock and others; in his remarks on the effect of light upon Ants, he appears to differ slightly from Sir John in his conclusions, he seems to think that Ants are attracted by light and heat, whereas Sir John Lubbock seems to think that they are attracted by heat and darkness. The remarks as to the farm-stock, &c., of the Ants, in Chapter XIII may be thought a little fanciful, and we think we are right in considering *Platyarthrus* not only "very like a wood-louse," but really one.

From a scientific point of view, it is impossible not to take exception to the union of the true Ants and *Mutillidæ* in one "phalanx;" so far as we know, there has not been of late years a single continental authority who has adopted such a view, and it seems to be so completely at variance with the habits and structure of the creatures themselves, that we see no reason for adopting a principle so opposed to the general consensus of opinion.

FIFTH ANNUAL REPORT OF THE DULWICH COLLEGE SCIENCE SOCIETY, 1882. Dulwich College: January, 1883.

We are glad to be able to notice the record of the fifth year's work of the above Society. The report before us shows that the Society has been occupied in most branches of Science during the year, and in its Entomological portion contains an additional list of captures in the *Coleoptera* and *Hemiptera*, under the superintendence of Messrs. Theod. Wood and H. Bedford Pim. It is only to be regretted that while these families are so assiduously worked, some other members of the Society cannot be found to extend the list in the other less studied regions of the insect world.

CATALOGUE OF BRITISH COLEOPTERA. By Rev. A. MATTHEWS, M.A., and Rev. W. W. FOWLER, M.A. London: West, Newman, & Co. 1883. 48pp. 8vo.

In 1839, Stephens's "Manual of British Coleoptera" was published, and for many years it served as the only professedly complete enumeration of British Beetles, although some local lists did at times appear, the most considerable being Murray's "Catalogue of the Coleoptera of Scotland" (1853). In 1858, Mr. G. R. Waterhouse brought out his "Catalogue of British Coleoptera," a work of great labour and research, which placed us approximately in accord with continental nomenclature, and gave a great stimulus to collecting and determining our native beetles. Rye's Catalogue (1866) carried on the revision and incorporated the numerous additions; and about the same time (there is no date imprinted) appeared Crotch's "Catalogue," differing in some respects from the others, but, except as a collection of names of beetles, was useless to the student, by the omission of the names of the authors of the genera and species. In 1871 was published Sharp's "Catalogue," continuing the revision and additions up to date; but it was marred by the omission of the names of the authors of the genera. All the discoveries from 1855 to 1874 were described or critically noticed year by year in the "Entomologist's Annual," and since the latter year all the additions have been recorded from time to time in the pages of this Magazine, and enumerated in the Index of each yearly volume. In 1882, Mr. Pascoe published his "Student's List of British Coleoptera," of great value for its synoptic tables of Families and Genera, which serve, besides their primary object, to show on what extremely slight grounds a great many so-called genera are founded. All these labours have culminated in the present work, the product of the combined assiduity and research of two well-known and competent Coleopterists, which will tend still more to put us in agreement with the continuous investigations of foreign workers. How necessary this has been is evident on the consideration that Britain has no special fauna, but that, with the exception of some casual immigrants, it consists of species which are the lineal descendants of those which existed here at the time when this portion of Europe became detached from the mainland, and its inhabitants were "*penitus toto divisos orbe Britannos*;" that as regards the insects, nearly without exception, these species still exist on the continent, where they have been described and named, and the names thus given often conflict for priority with those given by British Entomologists, precedence going sometimes to one author sometimes to the other. There is, however, in this Catalogue, confessedly not much deviation from the nomenclature of its recent predecessors; the great difference from them lies in the arrangement. There are four primary divisions in the following order: ALLOMERA containing *Filicornia*, *Clavicornia*, *Lamellicornia*, and *Serricornia*; TETRAMERA containing *Longicornia* and *Monilicornia*; HETEROMERA and RHYNCHOPHORA; with divisions into tribes and families, &c. The scheme is, to a great extent, that of Leconte and Horn; the reasons for adopting it are given in the preface, and need not be cited here. There is very much to be said for this system as being a superior linear arrangement, although objection will doubtless be taken to the sequence of the great divisions and the position assigned to some forms; yet it will, we think, eventually be approved as a whole, indeed, it is already coming into favour on the continent, or, more strictly, so much of it as has been published, the unpublished part having been specially communicated to the authors of this Catalogue.

The typography is clear, distinct, and remarkably free from errors. All concerned have done their parts well; it remains for the Coleopterists to do theirs.

ENTOMOLOGICAL SOCIETY OF LONDON : *5th February*, 1883.—J. W. DUNNING, Esq., M.A., F.L.S., President, in the Chair.

The President appointed Messrs. Stainton, Godman, and McLachlan, Vice-Presidents for the year.

The following were elected, viz., A. C. Horner, Esq., of Tunbridge; P. Crowley, Esq., of Croydon; and Capt. G. E. Shelley, of Tenterden Street.

Mr. Billups exhibited an exotic Orthopterous insect of the family *Locustidæ*, found living in a hothouse at Lee; it was strongly carnivorous in its habits.

Mr. Pascoe called attention to a letter from the Duke of Argyll that had recently appeared in "Nature," respecting the mimetic resemblance of a moth (species not given) as observed by him in the Riviera; some discussion ensued, but no Member appeared able to identify the moth from the vague description given.

Mr. Peringuey communicated notes on the habits of several South African species of *Paussus*, and especially in connection with their powers of crepitating, and carnivorous propensities.

7th March, 1883.—The President in the Chair.

The following were elected, viz., F. W. Smith, Esq., of Blackheath; F. F. Freeman, Esq., of Plymouth; and F. C. Lemann, Esq., of Plymouth.

Mr. McLachlan exhibited an example of *Polistes hebræus*, an Indian and Chinese wasp, found living a few days previously on board a ship in London that had recently arrived from Calcutta. It was apparently dead at the time of exhibition, but revived with the heat of the room. He thought it had possibly been bred from a nest inside bamboo.

Dr. Sharp exhibited a dissection of the prosternum of an *Elater*, and called attention to the peculiar condition of the prothoracic stigma, which was closed by a perfect trap door. He thought this arrangement might be useful in excluding parasites when the beetle was on its back, after the manner of its kind.

Mr. Billups stated that the Orthopterous insect exhibited at the previous meeting proved to be a species of *Copiophora*, and its native country was probably Central America. He also exhibited two species of *Ichneumonidæ* taken at Chobham, new to this country, viz., *Hemiteles fasciatus* and *Phæocerus homochlorus*.

Mr. G. S. Saunders sent for exhibition an apparatus he had invented for the better examination of minute insects and dissections under the microscope. It consisted of an adaptation of the "universal hinge" let into a slip of wood, and furnished with an adjusting screw.

Mr. Bridgman communicated further additions to the List of British *Ichneumonidæ*.

ON THE SYNONYMY OF CERTAIN *MICRO-LEPIDOPTERA.*

BY E. MEYRICK.

Observing that Mr. A. G. Butler, of the British Museum (see *ante*, pp. 106—108), has endeavoured to identify some of the Australian *Micro-Lepidoptera* described by Zeller with Walker's species, I think it desirable to point out some instances in which I am disposed to arrive at different conclusions.

Œcophora dichroella, Z., is identical, as stated, with the species described by Walker as *Œc. divisella* on p. 685 of the catalogue, but as Walker had already described another *Œc. divisella*, on p. 677, the second one must be considered cancelled, and Zeller's name will be retained. The species is referable to *Cœsyra.*

Œc. irruptella, Z., is a species of *Philobota*, and widely remote from *irruptella*, Walk.; but it is singular that either Prof. Zeller or Mr. Butler should think it necessary to account for Walker's having widely separated allied species. *Œc. irruptella*, Walk., belongs to the *Tineidæ*, and has no relationship whatever with *Cœsyra dichroella*, Z. (*Œc. divisella*, Walk.), as stated.

Œc. trijugella, Z., is not identical with *Œc. bracteatella*, Walk.; they are allied, but perfectly distinct, species of *Philobota.*

Œc. griseicostella, Z., is correctly identified with *Œc. productella*, Walk.; it is a species of *Philobota.*

These are the only Australian species alluded to by Mr. Butler.

With regard to the generic identifications. Walker's genera *Vazugada* and *Tortyra* must be wholly rejected, the diagnoses being perfectly worthless; genera are abstractions, and cannot be determined from types. Zeller's generic names will, therefore, stand.

Whilst on this subject, I may as well correct the synonymy of two or three species of Australian *Micro-Lepidoptera* described by Mr. Butler in the Annals and Magazine of Natural History for 1882, pp. 96—102.

Rhodaria robina, Butl. (p. 96), is a synonym of *Endotricha pyrosalis*, Gn.; *Endotricha ignealis*, Gn., *Pyralis stilbealis*, Walk., and *Pyralis docilisalis*, Walk., are also synonyms of the same species: Walker's descriptions being taken from females. The species is a true *Endotricha*, and has, therefore, no affinity with *Rhodaria*, Gn., which is not separable from *Botys.*

Thinasotia (*Crambus*) *impletella*, Walk., is quite erroneously stated (p. 98) to be identical with *T. pleniferella*, Walk.

Conchylis Thetis, Butl. (p. 98), is a synonym of *Dichelia isoscelana*, Meyr.; the species has, of course, no possible connection with *Conchylis*. The insect alluded to as a new *Penthina* (p. 99) is the female of the above species.

Conchylis ? *auriceps*, Butl. (see note, p. 99), has no affinity whatever with the *Tortricina*, being, in fact, a species of *Philobota* (*Œcophoridæ*) closely allied to *P. Arabella*, Newm., from which it seems to me that Mr. Butler is mistaken in asserting that it differs in neuration and other respects. The locality is given as "between Sydney and Moreton Bay," places 500 miles apart.

Christchurch, New Zealand:
January 4th, 1883.

ON THE BRITISH SPECIES OF *EREMOCORIS.*

BY J. W. DOUGLAS.

In the "British Hemiptera" (1865), under *Eremocoris erraticus* (1) is described, at p. 178, a form (2) which had been deemed to be distinct, but both forms having been submitted to Dr. Fieber were returned as *E. erraticus*, Fab., No. 2 with the remark "*Eremocoris erraticus*, Fab.: ist vollkommen gezeichnet und hiernach die europ. Hemipt. zu berichten." The two forms thus became to us but varied representatives of one species; but when I said (Ent. Mo. Mag., xi, 265, [1875]) that the Fabrician type specimen of *Lygæus podagricus* agreed with our *E. erraticus* it was the form No. 2 that I had specially in view: this identity has been since corroborated by Mr. Edward Saunders. Recently I sent to Dr. Horváth an example of No. 1 and 2, the same in fact that had been to Fieber, and No. 2 comes back as *L. podagricus*, Fab., this conclusion verifying that derived from my examination of the original, of which Fabricius says "*Femora antica bidentata atra, pedes reliqui picei*;" the original idea of Douglas and Scott that it was a distinct species being also corroborated. Until I identified it as above stated, *podagricus* had been referred to as a synonym of various species, but in 1874 it was acknowledged as distinct by Populus who described it under the name *icaunensis*.

Our *E. erraticus* (No. 1) is pronounced by Dr. Horváth not to be the Fabrician species of that name, but *Pachymerus fenestratus*, H.-Schf., Wanz., iv, 95, T. 140, fig. 437, a species very similar but distinct, the special characteristics being that all the thighs are black and the first pair have *two* prominent teeth on the under-side. Herrich-Schäffer only says "Schienen und Tarsen rostroth," but the figure has *all* the thighs black. The species has been placed, by those authors who have referred to it, as a synonym of *E. erraticus*.

Assuming this differentiation to be correct, and I am disposed to concur, it would, so far, seem that *E. erraticus*, Fab., was not an inhabitant of Britain; but in the Ent. Mo. Mag., viii, 98 (1871), Dr. F. Buchanan White recorded the capture of an *Eremocoris* living in April in small companies below stones on the bare and treeless summit of Mòr Shròn in Aberdeenshire, far from juniper or fir-trees; this he and I deemed to be *E. erraticus*, and a recent examination of the specimens shows that they are the true species, having the Fabrician characters of legs entirely rufo-testaceous and the anterior thighs with only one prominent tooth beneath. This species appears to be generally distributed in Europe. Dr. Horváth has sent a Hungarian example.

Our *E. plebeius* Dr. Horváth says is correct.

The British species may be thus enumerated:—

1. *erraticus*, Fab., et auct.
2. *fenestratus*, H.-Schf., Horv.
   E. erraticus, partim, D. & S., Brit. Hem. (syn. excl.).
3. *podagricus*, Fab., Doug. (syn. excl.), Horv., E. Saund. (syn. excl.).
   E. erraticus, partim, D. & S., Brit. Hem. (syn. excl.).
4. *plebeius*, Fall., Horv.

Dr. Horváth wrote to me that his article on *Eremocoris* would appear in the "Revue d'Entomologie de M. Fauvel:" this I have not seen, but the foregoing rectification is in accordance with his conclusions as intimated in his letter.

8, Beaufort Gardens, Lewisham:
31st March, 1883.

THE BRITISH SPECIES OF THE GENUS *PSITHYRUS*, LEP., = *APATHUS*, NEWM.

BY EDWARD SAUNDERS, F.L.S.

Dr. Schmiedeknecht has just published in "Apidæ Europææ," fasc. v and vi, a Monograph of the European species of *Psithyrus*, in which he describes eight species; of these we appear to have five in this country, although hitherto we have only known four. These five are *rupestris*, *vestalis*, *campestris*, *Barbutellus*, and *quadricolor*, the last of these being identical with *Barbutellus*, Smith, *nec* Kirby. How F. Smith came to apply Kirby's *Barbutellus* to *quadricolor* I cannot imagine, as Kirby's description certainly will not agree with it, and in his collection the males of the two species are mixed, and both females are *Barbutellus*, Schmied. Kirby's description of the abdomen of the ♂, "Abdomen triangulare sub-acuminatum, segmento primo villorum flavidorum, penicillo utrinque ornato. Anus albus, extremitate nigro-villosus haud inflexus," cannot possibly apply to *quadricolor*, which has the abdomen sub-globose and its extreme apex fulvous-red. F. Smith seems to have realized this, saying, in his 1st edition of the Catalogue of the Bees of Great Britain, under *Apathus Barbutellus*, "I suspect a difficulty has arisen in the discrimination of this species, in consequence of Kirby using the terms, 'abdomen sub-triangular' and 'anus albus;' the latter is fulvous, which in worn examples becomes white. I have used the term sub-globose in describing the abdomen of the ♂, and although strictly it is sub-triangular, still, in contradistinction to the male of *campestris*, it is sub-globose, and will serve as a distinction between them."

Now, in Kirby's collection there are two males, one which agrees in every particular with Kirby's description, having the abdomen shaped as in *campestris*, and which is certainly referable to the *Barbutellus* of Schenck and Schmiedeknecht; the other a specimen, I believe of *quadricolor*, but with the extreme apex of the abdomen wanting: under these circumstances, I can see no excuse for not accepting the specimen, which alone suits the description, as the type, and I have therefore followed the nomenclature adopted by Schenck and Schmiedeknecht. The five species may be easily distinguished thus:

(2) 1. Fourth and following segments of the abdomen red in both sexes ..*rupestris*.

(1) 2. Fourth and following segments either white or yellow, or of various colours, but not all red.

(4) 3. ♂ with the abdomen sub-globose, the extreme apex fulvous, ♀ with the extreme apex of the abdomen beneath armed with a pointed process... *quadricolor*.

(3) 4. ♂ with the extreme apex of the abdomen black, ♀ with the apex simple.

(6) 5. Both sexes with the posterior metatarsi almost as wide as the tibiæ, and generally with a line of yellow pubescence dividing the black of the base of the abdomen from the white of the apex. ♂ with the sagittæ of the genitalia not toothed beneath .... *vestalis*.

(5) 6. Posterior metatarsi much narrower than tibiæ, no yellow line of pubescence between the black and white. ♂, sagittæ toothed beneath.

(8) 7. Apical segments of ♂ black or yellow, not white, 6th segment beneath simple, genitalia with the squamæ widely triangular, ♀ with the apex of the abdomen yellow at the sides, 6th segment shining at the base .. *campestris*.

(7) 8. Apical segments of the ♂ white, 6th segment beneath with a slight callosity on each side, genitalia with the squamæ narrowly triangular, ♀ with the apex white, the 6th segment rugosely punctured...... ....*Barbutellus*.

The species now called *Barbutellus* is apparently common, only it has been overlooked. Sir Sidney Saunders has had the males separated for some time in his collection by the genitalia.

Holmesdale, Upper Tooting:
16*th April*, 1883.

NOTES ON NEW BRITISH *COLEOPTERA* SINCE 1871; WITH NOTICES OF DOUBTFUL SPECIES, AND OF OTHERS THAT REQUIRE TO BE OMITTED FROM THE BRITISH LIST.

BY THE REV. W. W. FOWLER, M.A., F.L.S.

(*continued from p.* 250.)

PTINIDÆ.

Ptinus testaceus, Ol.

Allied to *P. fur*, but readily distinguished by the fact that it has no tufts of white hair in the middle of the back of the thorax: Dr. Sharp records this species (Ent. Mo. Mag., ix, 268), but says that he did not capture it himself, and can give no clue to its locality: it seems to require further evidence before being admitted into the British list.

HETEROMERA.

TRIBOLIUM CONFUSUM, Duval.

This species is rather longer, broader, and flatter than *T. ferrugineum*, F., and has the thorax more rounded at the sides in front; its antennæ are gradually dilated towards the apex, instead of having the last three joints decidedly broader than the preceding joints (Ent. Mo. Mag., ix, 268).

Latheticus oryzæ, Wat.

This insect is very much of the shape of a *Tribolium*, but may at once be distinguished by its very curious antennæ; it is, however, so evidently an importation, that it requires no further notice; the same, perhaps, might with reason be said of the preceding species, but it is exceedingly hard to draw a hard and fast line in these cases.

ABDERA TRIGUTTATA, Gyll.

This insect is a little like *A. bifasciata*, Marsh., but is larger and much broader (especially behind) in proportion, with the markings of the elytra very different: it is very pubescent, and rather coarsely punctured all over, and has the two basal joints of the antennæ testaceous. It was first found by Mr. Champion under bark of young dead standing Scotch firs at Aviemore, in June, 1874 (Ent. Mo. Mag., xi, 63).

Serropalpus striatus, Hellen.

This is an insect that is very doubtful as British; Mr. Blundell, of Luton, has a specimen that he took near Luton, and he writes to me that he feels sure that it was taken by him out of doors, but that he cannot remember the locality, as he was only just beginning to collect *Coleoptera* at the time; he did not know the insect until Mr. Waterhouse named it for him.

ZILORA FERRUGINEA, Payk.

The genus *Zilora*, which is new to the British list, is closely allied to *Dircæa*, from which it differs in its coarser punctuation, in the third joint of its antennæ being shorter and narrower than the fourth, in its smaller and narrower thorax, and shorter tarsi. Found at Braemar by Dr. Sharp and Dr. Buchanan White, and by Mr. Champion at Aviemore (Ent. Mo. Mag., viii, 74; xi, 63).

ANTHICUS SCOTICUS, Rye.

This is the *Anthicus* originally named by Du Val as *A. flavipes*, Panz.; the much finer punctuation of *A. flavipes*, however, is sufficient to separate it from this insect, although it is closely allied to it. Mr. Rye has, therefore, made it a new species. It comes nearest to *A. angustatus*, Curt., of our recorded species, but differs from it in its shorter and stouter antennæ, larger size, broader build, darker limbs, broader and shorter thorax, and much broader elytra. It is the *Anthicus* 6, sp. nov., of Waterhouse's catalogue. Found by Dr. Syme and Mr. E. A. Waterhouse in some numbers on the banks of Loch Leven (Ent. Mo. Mag., ix, 10).

Meloë cyaneus, Muls.

This is probably only a variety of *M. proscarabæus*, L. Mr. Rye referred several specimens of *Meloë* taken in the Isle of Man and near Barnstaple to Mulsant's insect, but came to the conclusion that the latter is itself only a variety (Ent. Mo. Mag., viii, 248, 288).

ANASPIS VARIEGATA, Power.

This insect, of which Dr. Power possesses a long series taken in the south of England, comes near *A. frontalis*, L., but may easily be separated from that insect by the light colour of its legs, and its more shining appearance.

ANASPIS MONILICORNIS, Muls.

Mr. Crotch includes this insect in his catalogue with a query, stating that it has the colouring of *A. rufilabris*, but with no ventral appendages in the male, and the first joint of the anterior tarsi equal to the second, whilst in *rufilabris* it is much shorter. Dr. Power possesses a specimen in his collection, and, on his authority, we have again introduced it.

(*To be continued*).

A correction.—On the last page of the April number of this magazine, in the report of the proceedings of the Entomological Society, Mr. Billups is reported to have exhibited two ichneumons, viz.: *Hemiteles fasciatus* and *Phæocerus homochlorus*; the first of these names was only MS., and has been altered to *incisus*, at present also MS.; the other species should have been *Phæogenes homochlorus*, Wesm.—JOHN B. BRIDGMAN, Norwich: *April* 11*th*, 1883.

[We are much obliged for this correction. We think it is generally known that our reports of the proceedings of the society are *not official*.—EDS.]

NATURAL HISTORY OF *PETASIA NUBECULOSA.*

BY WILLIAM BUCKLER.

On 6th of May, 1881, I received from Mr. H. McArthur while he was collecting at Rannoch, a dozen eggs of this species, laid loose, and on small morsels of bark; of these, two proved infertile; the first egg hatched on May 16th, being one I had previously sent to the Rev. J. Hellins; with me two were seen to be hatched in early morning of the 17th, two at midnight, three by next morning, one near midnight following, and the last one by morning of the 19th.

All my young larvæ took to birch readily, but the one Mr. Hellins had chose oak, and fed on it until its third moult, and from that time, the 4th of June, it would eat birch, and not oak; after feeding their growth was very perceptible, and when six days old they each in turn lay up for moulting; this operation occurred five times in all before their full growth was attained; generally they agreed very well together,—though two individuals during the earlier stages while helplessly laid up waiting to moult appeared to have been inconveniently in the way of some of the others, and so got fatally bitten behind; afterwards, with more space, they proved to be very contented and well behaved.

They became full-fed from June 26th to 29th, and retired to earth; over the earth, at the end of June, I placed a thick covering of moss, and found afterwards that only two had elected to remain below in the earth, and that the other five were lying in the pupa state on its surface beneath the moss; the larva, with Mr. Hellins, had buried itself four or five inches deep in the loose leaf-mould furnished for its retreat.

I bred three male moths and one female in March, 1882; the single pupa of Mr Hellins stood over until the present season, and disclosed a fine male imago on 15th of February; my remaining pupæ produced fine male and female specimens on the 1st of this month of April.

It has been pointed out before that the egg of *nubeculosa* (as well as those of *P. cassinea* and *D. cæruleocephala*) does not follow the *Notodonta* so much as the *Noctua* type,—being circular, and convex above, with a largish central space covered with irregular reticulation, and on the sides from forty to forty-five blunt ribs, with somewhat coarse transverse lines, in height about $\frac{1}{36}''$, in width about $\frac{1}{24}''$; the shell rather glistening, the colour at first dirty drab-green, but soon becoming closely and tortuously streaked and blotched with blackish-green; a few hours before hatching these marks become indistinct and clouded, and the shell looks somewhat shrivelled.

The newly-hatched larva is about $\frac{1}{10}''$-in length, with the first and second pairs of ventral legs less developed than the third and fourth pairs, so that the walk is semi-looping; the head of a rather light shining orange-brown colour; the back slaty-grey, the sides pale drab, the black warts very large and round, each furnished with a small black bristle; in this stage the likeness to *cæruleocephala* is marked, but at each moult the warts become proportionately smaller and less conspicuous, besides assuming another colour, and so this resemblance disappears: from the first the young larva eats small holes quite through the leaves of its food, and I noticed its habit of spinning a few threads for a foothold.

After the first moult, a slight protuberance appears on the twelfth segment and front portion of the thirteenth, the ground colour is pale greenish, bearing dorsal and sub-dorsal lines of paler dots, and on the middle segments a wide sort of incomplete v in very fine black lines; the black tubercular dots were much smaller than before and only to be seen with a lens, but their bristles had become longer, the anterior legs were black, and on the outside of each ventral leg was a black spot.

After the second moult, the head was pale shining green, the body light dull green having a purplish tinge in it, the tubercular dots pale yellowish, the dorsal markings composed of elongate whitish-yellow dots two on a segment, and along the sub-dorsal region were four yellowish dots on each segment, a slanting streak of the same colour appeared on the side of the fourth, and a transverse streak on the ridge of the twelfth, and a black spot on each ventral leg as before.

Having moulted the third time, June 3rd—5th, the larvæ began to assume their well-known star-gazing posture, with all the front part of the body extended upward in a curve bringing the head so far back as to be elevated just over the eleventh segment, while the anterior legs were freely outspread, the third pair wider apart than the others; all the details of colour being similar to those of the previous stage.

The fourth moult happened on 9th—10th of June, and they soon resumed feeding, eating large pieces out of the leaves at intervals, and at other times were to be seen for long periods hanging to the birch sprays motionless in their singular attitude of repose, but yet so suggestive of great muscular exertion and watchfulness; their growth now seemed rapid, as in course of three days they were observed, when in motion, to be an inch and three lines long, stout, and thickest behind, their colouring of the same light green as before, the upper surface bearing rather warty spots of bright yellow, and, of the same yellow, slash-like streaks on the thoracic and posterior segments; the anterior legs black, ringed with ochreous at the joints; some individuals still bore the large roundish black spot above the foot of each ventral leg, while others had only a black outline of it, or part of it.

The fifth moult occurred on 15th—19th of June, and for a time after this operation the head was of rougher texture than heretofore, but gradually, in three or four days, regained its glossiness; the larva now did not so often assume its posture of contemplative repose, but seemed more intent on its consumption of food, and in the shorter intervals of rest was to be seen lying quite at full length, or in a gentle curve, along the birch twigs quite fat and lethargic, until almost full fed, but when this stage was reached, it again was frequently to be seen in its more characteristic position; when quite full grown the larva was of the length of 2 inches, and of thickness in proportion, with a very soft skin; the head full and rounded, with lobes lightly defined; the body cylindrical with plump segments deeply divided as far as the twelfth, and there tumid and humped with a slight dorsal ridge, thence sloping and tapering a little on the very long front part of the thirteenth and still more on the short anal flap, deep wrinkles sub-dividing only the thoracic third and fourth segments; the anterior legs rather small but set on large pectoral muscular foundations; the ventral and anal legs stout with well developed feet and hooks to secure prehension and progression: the colour of the head is now pale bluish-green, the upper lip whitish or else pale yellow, the mouth black; the back of a delicate pale yellowish-green becomes paler and opaque from the thoracic segments to the twelfth, blending gradually into a deeper brilliant yellowish transparent green on the sides and belly; the slightly raised spots are all of pale primrose-yellow, the dorsal series are elongate-oval in shape, two on each segment one beyond the other in a broken line on the fifth to the eleventh inclusive; the other series of spots are of round shape, such are the trapezoidally arranged fours of the back, the sub-dorsal broken line of threes, the lateral single spot, and the spiracular line of fours and the single spot below each spiracle, which itself is white, tenderly outlined with black; a transverse series of four spots show faintly on the fourth segment, a small tumid side streak of the same yellow is on the third, and another conspicuously larger and longer is on the fourth slanting down obliquely forward; on the back of the twelfth are two spots, and behind them on the summit two much larger spots united to a tumid curved streak of yellow; a conspicuous tumid side streak of similar yellow begins behind the spiracle and tapers off on the margin of the anal flap; the anterior legs are bright red, and outside each ventral leg is a roundish ring of black, the feet being furnished with brown hooks.

The pupa is a full inch in length, by four and a half lines in width at the thickest part across the ends of the short wing covers, the antenna-cases well developed; the head and thorax smooth, the wing covers most minutely roughened, also the upper portions of the abdominal rings, the free segments of the abdomen are very deeply cut and gradually taper towards the end, but with dissimilar outline on the ventral and dorsal surfaces; the ventral becoming bluntly rounded, and the dorsal rising somewhat in a hump from which springs the base of a prolonged stout spike, whose blunt extremity is furnished with two fine tapering points bent downwards and curved like claws; the colour is a deep and dingy red during the first year, and in the second becomes a blackish-brown, bearing a slight purplish gloss.

Emsworth: *April 9th,* 1883.

Entomological collecting during a voyage to the Pacific (concluded). The genus *Papilio* was represented by twelve species, the commonest being *P. Philenor*, a handsome black "swallow-tail," glossed with rich bronze-green, and with a curved row of large, round, bright orange spots on the hind-wings beneath. Two or three very showy red-spotted black species were also fairly plentiful in the lanes, and two or three very beautiful and delicate-looking semitransparent species with very long tails (related to the South American *P. Protesilaus*, &c.) also occurred, but were very hard to obtain in perfect condition. The large and handsome *Gonepteryx Clorinde* occurred sparingly, as did the beautiful sulphur and black *Colias Cæsonia*; and seven or eight species of *Terias*, including some fine orange-coloured ones, abounded in all the more open places. Settling on tree-trunks, I found three species of *Ageronia*, *Smyrna*, sp., and two of *Siderone*, the latter, however, being represented by single worn specimens. *Marpesia Thetis* was often seen, but persisted in keeping well up out of reach of a long-handled net; *Eresia*, *Euptoieta*, *Melitæa ?*, and *Phyciodes* were well represented in grassy openings and cocoa-nut groves; and by road-sides I took several specimens of the singular *Libythea Carinenta*, with its excessively long palpi. A lovely specimen of *Biblis*, quite distinct from the one found at Panamá, occurred singly at a thicket, and several fine *Erycinidæ*, *Theclæ*, and skippers, some of the latter being very large and handsome, complete my list of captures. I noticed comparatively few moths, though there were some pretty little day-flying *Bombyces* among them. Beetles were fairly numerous, though mostly small; but I got some nice *Lycidæ* and *Cassidæ*, one or two *Cetoniæ*, and other interesting species.

Leaving Acapulco on June 23rd, we anchored off the miserable little port of San Blas on the evening of the 26th. The town, which is notoriously unhealthy, is built on about the worst site it is possible to imagine—a flat strip of sand only four or five feet above high-water mark, shutting off the inner harbour, a mere shallow lagoon, from the sea, and with pools of foul-smelling stagnant water in many places among the houses. We stayed at this delightful spot only twenty-four hours, but I was able to get a short walk on shore for about two hours in the early morning of the 27th, which I spent for the most part in fighting mosquitoes and sand-flies. These blood-thirsty wretches swarmed to an extent which I could scarcely have believed possible, rising up off the bushes like thin clouds of smoke, as I walked along the paths in the thickets outside the town. It was not very easy to devote any attention to other insects, but I noticed a good many of the Acapulco butterflies, and was especially pleased to come across the huge satiny-white *Morpho Polyphemus*, of which I secured a splendid pair. This beautiful creature flies with a slow, undulating motion over the tops of the tall brushwood, and has a noble appearance on the wing: but the horribly tangled and thorny nature of the places it frequents, renders it anything but an easy prey. *Deilephila Daucus, Gonepteryx Clorinde*, and other useful things, were taken on board the ship.

We passed Cape St. Lucas on the evening of the 29th, immediately experiencing a fall of 20° in the temperature of the sea and air—a most welcome change after the excessive heat of Acapulco and San Blas. The appearance of the coast of Lower California was not less different, as it was as barren and desolate as the worst part of the Peruvian seaboard, being a waste of naked rocks and yellow sand-hills, without a scrap of vegetation of any sort, and rising, in the background, into rugged mountains, 4000 or 5000 feet high. The wind was in our teeth all the way, compelling us to use steam, and on the night of the 8th July, we had to put into San Francisco to replenish our coal. We stayed here only two days, during which time, being very busy, I was able to see but very little of this great city. Leaving again on the 11th, and encountering a strong and northerly gale during the greater part of the following week, we were all very glad to find ourselves safely anchored in the beautiful little harbour of Esquimalt, in Vancouver Island, by midnight on the 18th.

As the "Kingfisher" remained at this port for more than three months, I had a good opportunity of investigating the local insect-fauna; and, although I was too late for some of the best things, my success was, on the whole, very satisfactory. I was fortunate enough to meet with a brother collector, Mr. W. Taylor, of Derby, and together we worked hard at the *Coleoptera* and *Lepidoptera*. The country for six or eight miles round Victoria (the capital of British Columbia, about three miles distant from Esquimalt), is exceedingly pretty and varied, being covered with fine timber down to the sea-shore, alternating with wide stretches of open meadow and corn-land, dotted with large oak-trees, and gradually merging into the dense forest which clothes nearly the whole of Vancouver Island. The trees are for the most part the Douglas Fir (*Abies Douglasi*), which attains very large dimensions, and yields valuable timber: with a sprinkle of maple, alder, willow, aspen, cedar, arbutus, &c.: the undergrowth consists of two or three species of wild-rose, brambles, snowberry (*Symphoricarpus racemosus*), and "Sallal" (*Gualtheria shallon*), an evergreen rather like our bilberry, and producing an edible fruit: wild cherries, raspberries, and gooseberries also abound. The woods are intersected in all directions by narrow paths or "trails," in which it is by no means difficult to lose oneself, as I found more than once to my cost. About five miles from Esquimalt is a series of lakes abounding in trout, and surrounded by wide marshy borders, where many good insects occur.

We enjoyed exceedingly fine weather up to the middle of October, when it became cold and rainy: the nights were unusually still, cool, and cloudless, and to this circumstance I attribute the entire failure of sugar, which I tried on a good many evenings without attracting half-a-dozen moths in all.

Although butterflies were exceedingly numerous up to the middle of September, I noticed only about twenty species, among which I may mention *Papilio Turnus*, L., of which the larvæ occurred sparingly on willows and sallows; and *P. Oregonia* ?, which was occasionally seen in the marshes, where the larva was to be found in some small numbers feeding on a species of *Sium*. This beautiful insect bears a very close resemblance, in all its stages, to our familiar *P. Machaon*. A very handsome and delicate *Pieris* (? *P. Menapia*), almost like a *Leucophasia* in structure and flight, appeared in great numbers about the middle of August, the ♂ flying in hundreds round the tops of the pines, and also frequenting wayside flowers, the ♀ being comparatively very scarce. The *Satyridæ* were poorly represented by a little *Cænonympha*, almost exactly like a small *C. Pamphilus*, which was common in grassy places. *Limenitis Lorquinii* well replaced our "White Admiral," which it closely resembles, except that the fore-wings are tipped with ferruginous, and it is much redder beneath; it was very common, and an exceedingly pretty object, sailing gracefully along the sunny "trails" and roads, and settling, by preference, on the brake-fern (*Pteris aquilina*). Unfortunately, I was too late to get it in really fine order. *Pyrameis cardui*, not to be distinguished from British specimens, turned up sparingly, and *Vanessa Antiopa* was common enough, the chrysalis being often found attached to walls, &c., even in the town of Victoria, but it was generally ichneumoned. The specimens of this insect are rather smaller and darker than average British or European ones, the pale border being of quite a rich yellow tint. *Vanessa Milberti*, like a very dark *V. urticæ*, was to be found in weedy places and by roadsides, with two, or, perhaps, three species of *Grapta*, nearly related to our *C-album*, and differing chiefly in the shape of the white letter-like mark in the hind-wings beneath. The larvæ were to be found feeding on nettles, hop, &c., and the pupæ attached to walls and fences. Three species of *Argynnis* occurred, one of which, *A. Calippe* (very like *Aglaia*), was almost the commonest fly of the district; another fine species (? *A. Atlantis*), of about the same size, but much darker above and beneath, with the silvery spots of the hind-wings replaced by yellowish-white, was more local, but not rare, and the pretty little *A. Freya* (I fancy it is the same as the North European species) occurred to me only singly, but it is a common spring insect. A small dark *Thecla*, near *pruni*, &c., was somewhat scarce, and a very beautiful *Chrysophanus* (the ♀ bright red, spotted and bordered with black, the ♂ suffused with rich violet-purple) was very abundant, frequenting hawk-week and camomile flowers by the road-sides. Two species of *Pamphila*, bearing considerable resemblance to *P. sylvanus* and *comma* respectively, were also to be found in the same situations.

The only true *Sphinx* I met with was a *Smerinthus*, closely related to *ocellatus*, which occurred rarely in the larva state on willow. A very fine red-belted *Sesia* was once taken at rest: two very handsome *Saturnia* larvæ were also to be obtained very sparingly on oak bushes and "woolly bears" of several kinds were met with everywhere in the autumn, but *Bombyces* were decidedly scarce in the perfect state. The *Noctuæ*, in spite of the failure of sugar (at which the only thing taken that was worth pinning was a fine *Catocala*, near *sponsa*), were fairly well represented, many pretty species being taken by my friend, Mr. Taylor, at light. The *Geometræ* were more plentiful, some species, indeed, occurring in extreme profusion, notably, a handsome brown and ochreous *Ennomid* ? moth, the larvæ of which (locally known as "span-worms"), in July, completely stripped the oaks in many places, and then perished in many places for want of food; and, in September, the trunks of the trees were covered with the moths closely packed together, and a stone, thrown up so as to strike a branch, brought them out in absolute clouds. Several fine "yellow thorns" were to be found by searching after dark with a lantern, and by beating the pines, &c., many pretty "Carpets," with a considerable number of *Tortrices* and *Tineæ*, but comparatively few *Pyrales*, *Crambites*, and *Pterophori*, occurred; the little *Alucita polydactyla* was very common in the autumn. A considerable number of the local moths were either absolutely identical with, or very closely related to, well-known British species: among others, I may mention, *Orgyia antiqua*, *Miana strigilis*, *Apamea oculea*, *Xanthia silago*, *Gonoptera libatrix*, *Plusia gamma*, *Metrocampa margaritata*, *Macaria alternata*, *Melanippe subtristata*, *Scotosia dubitata*, *Eucosmia undulata*, *Coremia ferrugaria*, *Cidaria prunata*, and *immanata*, &c.

The season was too far advanced for most of the *Coleoptera*, but I found a good many interesting species, chiefly by tearing the loose bark off felled trees and pine stumps, sweeping being of very little use. Some fine *Elaters* occurred, notably *Alaus luscus*, F., a very handsome species, an inch and a half long, brown, with two large, white-ringed, black eyes on the thorax. Among the Longicorns, I may mention, *Prionus pocularis* ?, not unlike our British species, and another grand *Prionid* reminding me of the S. European *Rhesus serricollis*. Two or three good-sized and very handsome green and coppery species of *Ancylochira* represented the *Buprestidæ*; *Cucujus puniceus*, a conspicuous blood-red and exceedingly flattened beetle, turned up under oak bark, where two or three good-sized *Heteromera* also occurred. A *Cicindela*, not unlike *campestris*, was common in muddy places: two very pretty species of *Cychrus*, and a handsome *Carabus* with brown wing-cases, occurred in the marshy ground about the lakes, with other *Geodephaga*: and among other interesting genera I may mention *Necrophorus* (several species under dead birds, &c.), *Anisotoma*, *Amphotis*, *Nosodendron*, *Anthribus*, *Molorchus*, (a very fine, large species, of exceedingly wasp-like aspect), *Opilus*, *Sinodendron*, &c. A fine, dark brown Longicorn, not unlike the European *Criocephalus rusticus*, flew on board the ship in large numbers during several evenings in August, being evidently attracted by the scent of the newly-tarred rigging.

Nearly every pine stump in the woods was more or less infested with a large species of *Termes*; the "soldiers" being fully an inch long, with huge crooked jaws. The winged forms flew in thousands on still evenings in August just before sunset; it seemed strange to meet with these insects, usually associated in our minds with the tropics, in lat. 49° N. *Orthoptera* were exceedingly abundant, one very conspicuous grasshopper, with bright yellow hind-wings, was remarkable for the noise it made when flying, exactly like a watchman's rattle, and audible, I should say, at 100 yards distant. Wasps were most unpleasantly numerous, and, although for the most part small, were particularly fierce and venomous: some of their nests built in trees, were of very beautiful construction, but dangerous to approach, as I found more than once. During September, I beat a good many Lepidopterous larvæ from small oaks, &c., but found a large proportion infested with Dipterous parasites, not one individual of several species being free from them.

13th December. I have written up this letter at intervals during our voyage from Esquimalt to Callao; we left on October 29th, and, having encountered very rough weather outside Vancouver Island, we had to put into San Francisco, to replenish with coal. We stayed here only two days, leaving on November 7th: our passage from thence to Callao was pleasant enough, but very monotonous. I saw a good many specimens of the oceanic bug, *Halobates*, sp.?, on November 26th, about 400 miles from the nearest land, and caught a few for Dr. Buchanan White. They are curious little ivory-legged fellows, resembling our familiar "*Gerris*" in structure and habits, and they skip about in the net when caught in just the same manner: they are apterous, and covered with silky bluish-white down, which carries down a supply of air to serve them when they dive beneath the surface, which they do very readily on the approach of the net. They are only seen when the sea is perfectly calm. I tried to keep two or three in a large bottle of sea-water, but they very soon died.

As regards our future movements, I hear we are to remain at Callao for about two months, and then to go on to Tahiti: it is at present only a rumour, which I hope will turn out to be true, as I should very much like to see some of the islands, having done so much of the coast.—J. J. Walker, H.M.S. "Kingfisher," Callao: 13*th December*, 1882.

P.S.—I could not find any *Trichopterygia* at Esquimalt, though I tried more than once for them. I hope to be more successful here.—J. J. W.

On the probable identity of the species known as Agrotis tritici, aquilina, obelisca, and nigricans.—One summer, many years ago, I beat out of some ivy which covered the wall of a garden in this town, a great variety of common *Noctuæ*, and among them numerous specimens of *Agrotis nigricans* and *tritici*, and two each of *aquilina* and *obelisca*. I remember having been much surprised at the time at the occurrence of the last two species, the examples of which I still possess; but as an explanation, which will most likely equally surprise most of those who read it, I send the following notice, translated from the Jahrbücher des Nassauischen Vereins für Naturkunde, xxxiii—xxxiv, 1880—1881, p. 87.

Perhaps some of our English Entomologists may be able to corroborate the truth of a proposition, which, so far as I can find, has never yet been ventured here, that *nigricans*, *tritici*, *aquilina*, and *obelisca* are all variant forms of one and the same species.—W. Warren, Merton Cottage, Cambridge: *February*, 1883.

Jahrbücher des Nassauischen Vereins für Naturkunde, xxxiii—xxxiv, 1880—1881, p. 87. (Die Schuppenflügler des kgl. Regierungsbezirks Wiesbaden und ihre Entwicklungsgeschichte. von Dr. Adolf Rössler).

"*A. tritici*, L., is certainly the most variable of all our *Noctuæ*, in size, markings, and colour; nay, even the antennæ seem not to be quite the same in all examples. We had an opportunity of assuring ourselves on this point very completely. The devastation caused in vineyards on the frontiers of Moravia, recorded by Treitschke in vol. x, pt. 2, p. 19, of Ochsenheimer's work, has been repeated in our neighbourhood, at Ockelheim, near Bingen, in the years 1871 and 1872, to such an extent, that many individuals had their vineyards destroyed.

"Hundreds of larvæ were collected here in both years, of which the following description was taken—Very much like those of *segetum*, averaging an inch in length, yet very unequal in size, cylindric, stout in proportion to their length; colour that of the surface of the ground, sometimes lighter, sometimes darker, varying from dirty whitish-yellow to dark red-brown and yellow-brown. Head semicircular, light brown, with two dark lines; on the crown a collection of black spots. Plate on 2nd segment black-brown, with a central line and two side lines paler. Dorsal surface always lighter than that of the sides, in which respect there exists a likeness to the larvæ of the *Caradrinæ*. Dorsal line dark, divided by a pale line. Beneath the dark, straight, broad, sub-dorsal line there is indicated another fine lighter line. The blackish-brown spiracles stand on the border where the dark lateral and the pale ventral colours unite. Obliquely above and under each spiracle is a black-brown, horny, raised spot; these spots, like the plates on the second and anal segments, are weapons of defence for the larva when forcing its way into the ground; and there are others besides, in the place of the spiracles on the first segment, in the middle of the back, on the sub-dorsal lines, perpendicularly above and beneath each leg, and on the lateral edge these spots, like the head, are beset with short bristly hairs.

"The larvæ lived exactly like earthworms, by day underground, and by night only on the surface, in order to feed. Salad and such like succulent plants were much more relished by them than the tenderest shoots of the vine. The pupa, which possesses an extremely thin shell, lay in an earthern cocoon. Dr. Pagenstecher bred a large number of the larvæ with the same results as myself. I have already given an account of my first brood in the Jahrb. des Nass. Naturvereins for 1871—1872. Later on the larvæ had again disappeared, without any human means having been of any avail against them. In September, occasionally a few pass through their stages, and appear in the perfect state as rather smaller specimens than those of the first brood; but the large majority hibernate as larvæ. The perfect insects conceal themselves by day on the earth, in deep crevices of the bark of trees near to the ground, in chinks of stones, &c.

"Among the large number of examples reared in the course of these broods, there were those figured by Hübner[*] as *fumosa*, fig. 153, ***aquilina***, 135, ***obelisca***, 123, ***fictilis***, 479 and 710, ***unicolor***, 544, ***erata***, 623, ***carbonea***, 700, ***praticola***, 567, ***vitta*** and ***aquilina***, 533—35, ***ruris***, 416; besides the following figured by Herrich-Schäffer, ***adumbrata***, 121, ***rustica***, 495, ***fumosa***, 526, ***tritici***, 527 and 552, ***obelisca***, 529 and 553. All were plentifully represented, and it could not but be that all belonged to one and the same species, united as they were by numerous intermediate forms. Among them were several forms, especially of ***fumosa***, of a beautiful lilac tint, which, however, faded into grey in the course of a year. One ***obelisca*** was entirely lilac coloured without markings, with a white costal streak. Of varieties collected at the same time by night, there are besides to be mentioned a pale yellowish example, devoid of markings, with perfectly black outlines of the stigmata; and one found by Dr. Schirm, leaden coloured throughout without markings on the fore-wings, of which only the margin of the reniform stigma is indicated by a black spot. It is not improbable that there are besides other nearly-related forms not occurring here,

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"[*] Mr. Buckler describes, in the Ent. Mo. Mag., 1865, pp. 133 and 152, the larvæ of *aquilina* and *fumosa*, and finds in all respects a great similarity, but states, the latter may be distinguished by a double streak above the feet, and by the black warty spots (my larvæ, however, *all* had these). As he did not breed the larvæ from the egg, but had them sent by others, and could not, therefore, compare them from youth upwards, while I, on the other hand, bred no quite black examples of *nigricans*, but only grey ones, though marked in the same way, it will be just as well, perhaps, to try again, and to rear a brood from the egg."

which now pass as separate species, that likewise belong to *tritici*. The insect is a native not only of the district of the so-called European fauna, but, along with many others of our species of *Agrotis*, of North America also."

Capture of Mixodia rubiginosana, H.-S. (= Pæcilochroma Bouchardana, Doubdy.), and other local species in West Norfolk, last season.—Among captures made by my brother and myself in this district last season, were some which we were unable to name with certainty. These I sent to Mr. C. G. Barrett, who kindly named them for me. I was not a little surprised to find that *Mixodia rubiginosana* was amongst them. Five specimens of this species were taken by my brother on or about the 16th of June, in extensive fir-woods on rather elevated ground, about seven miles from this town. From enquiries I have made, it would appear that the species was probably introduced with trees obtained from Scotland and planted here, some twenty years ago. From the same locality and on the same day, two fine specimens of *Cryptoblabes bistriga* were boxed, and not more than half a mile from the woods on wet ground, a single representative of *Cosmopteryx Lienigiella* was met with. During the next month (July), whilst collecting *Stathmopoda pedella* among alders, a brilliant little micro was found in the net, which turned out to be *Bohemannia quadrimaculella*. In all, four specimens of this pretty little insect were taken. *Tinagma resplendellum* also occurred among alders.—EDWARD A. ATMORE, 8, Union Street, King's Lynn, Norfolk: *April*, 1883.

Spring Hymenoptera at Hastings.—I was at Hastings this year from the 22nd to 27th of March, and succeeded in capturing a fair number of the ♂ and ♀ of *Andrena lapponica* in the same locality near Ore, where I took the ♀ in April last year. I think this is worth recording, as I believe the ♂ has only been taken hitherto at Moffat and Bristol; in that locality I could find no other *Andrena* besides *lapponica*, but I met with a number of *A. Gwynana* near Fairlight Glen, in the exact spot where I took *A. bicolor* plentifully in August, 1879. This quite confirms the view that these two so-called species are only different broods of one.—E. SAUNDERS, Holmesdale, Upper Tooting: 16*th April*, 1883.

Obituary.

Professor Zeller. On the 27th March, Philipp Christoph Zeller died quite suddenly, of heart disease, at his residence, Grünhof, near Stettin. For more than forty years the name of Zeller has been constantly on the lips of Lepidopterists in Europe, and latterly his fame was as widely extended across the Atlantic and in our Australian colonies. His correspondence must have been very extensive, yet he was always ready to answer queries on any subject referring to his favourite branch of entomology, and though he had nearly completed his 75th year, he had not ceased to be a writer of long and neatly legible letters, nor were his scientific labours, especially in reference to Exotic *Micro-Lepidoptera*, supposed to be at all near their close. We hope to give a more detailed notice of the illustrious Professor in our next number.

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